

PERFORMANCE FEATURES OF A LOCAL NON-GOVERNMENTAL ORGANIZATION
IN NATURAL RESOURCE MANAGEMENT:
THE CASE OF THE BAY ISLANDS CONSERVATION ASSOCIATION

By

JANALYN F. SEED

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Andrew P. Smith

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**PERFORMANCE/FEATURES OF A LOCAL NONGOVERNMENTAL ORGANIZATION
IN NATURAL RESOURCE MANAGEMENT:
THE CASE OF THE BAY ISLANDS CONSERVATION ASSOCIATION**

by

Andrew F. Sells

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**Chairperson, Dr. Clyde F. Elzer
Major Department: Field and Forest Sciences**

This study provides a case study of the performance/features of a local environmental organization (NCO) engaged in natural resource management. The Bay Islands Conservation Association (BICA) implements programs as an attempt to meet its natural resource management and sustainable economic development objectives in the Bay Islands, Honduras.

BICA is composed of an economic organization consisting of inputs, outputs, production processes and associated expenses. It is also influenced by institutional features of the Bay Islands. Economic organizations are commonly analyzed in economic terms. Due to BICA's natural organization and focus on the broader social aspects of its behavior, the Association is seen as distinct from conventional economic organizations. Two new terms are introduced to understand social organizations: *Communicative Organization (CO)* and *Communicative Firm (CF)*.

Survey research techniques (cross stage-modified ethnographic approach) provide both quantitative and qualitative information. BICA's formation is seen to result primarily from local institutional and institutional processes. Largely, the relevance/validity of behavior is an economic self-interest. Results indicate that features of BICA's available outputs are institutionally related to its ability to meet its institutional objectives (intended outcomes). The form and quality of BICA's programs (outputs) are significantly correlated with its ability to meet culture as intended outcomes.

BICA is a structural feature and the perceptions of its members are critical. BICA's behavior and its ability to implement its programs are also heavily but not exclusively correlated. In general, the most successfully executed activities with BICA's performance include its ability to attract outside financing, the degree of member participation in its programs, its lack of corruption, its development of horizontal and vertical linkages with other organizations and agencies, and the degree of consistent activities between BICA's members and the behavior of large

Primary policy implications and recommendations drawn from this study apply to BICA itself. The same study also contributes to the information available to others interested in the performance of BICA and of NGOs in general (governments, associations, other NGOs, and development). Finally, this study contributes to the growing stock of information from which a general theory of NGO performance might ultimately be derived.

CHAPTER 1
LOCAL NONGOVERNMENTAL ORGANIZATIONS
IN NATURAL RESOURCE MANAGEMENT

Evolution in Local NGOs and the Inter-Agency Consortium Association

Non-governmental organizations (NGOs) provide an important avenue through which human, physical, financial and technical capital are channelled from rich to poor from North to South, from West to East, and from the international or national level to the local or regional level. The Inter-American Foundation (IAF) has identified and catalogued over 20,000 developing NGOs in the Americas alone. These organizations may be as small as 3 or 4 individuals with little or no budget, to associations with hundreds of thousands of members and budgets in the millions of dollars. In 1989 NGOs from the North distributed an estimated US\$ 4 billion to developing countries in the South, about 10% of all public and private development aid. Through these distributions, NGOs accounted for more direct transfer of funds from North to South than the World Bank (Inter-American Foundation, 1991).

Frustation with "top-down," "blue print," or "master plan" models of development and the restructuring of primary sector organizations has led to an increased interest in exploring the potentials of local solutions to local problems. "bottom up," "grass roots," or "participatory" approaches to economic development and natural resource management. The focus on local solutions has resulted in a proliferation of interest in NGOs as potential intermediaries in long-term economic development. Local level NGOs are increasingly seen as pivotal in reaching long-term economic development goals in rural or emerging regions.

There are five theoretical arguments about worker knowledge, decision, and action that have experienced significant improvement in their productivity and welfare have had more organizations at the local level that perform these functions and coordinate these activities. To the extent, rural innovation characterized by persistence or increasing capacity for or capacity, organizations, or subject need being have made extensive of organizations. (Cotton and Upjohn, 1994, p. 20)

However, all NGOs are not alike. As institutions, NGOs differ widely in modes of operation, activities, objectives, size, financing, budget, location and performance. All NGOs, like all governments and businesses perform within a national business context and a milieu of cultural, economic, legal, and political constraints. Some features of the institutional context are enabling and some are debilitating to the organizations. In addition, the structural and behavioral features of NGOs affect their performance.

The interdisciplinary dynamics of human organizations with their features and institutions encompasses and the complexity making NGOs under a different understanding scheme. Identifying the performance-enhancing features of NGOs has been controversial. Studies of various types of local NGOs (e.g., Arima, 1990; Carroll, 1992; Clark, 1993; Evans and Upjohn, 1994; Evans, 1995; Webb, 1994) have led to the creation of a great variety of potential correlations with performance. However, there are no known or generally accepted necessary conditions.

Research concludes that local NGOs have "two specific," namely structural/operational and as Evans is in duty performance. As a result, a general model of NGO structure, behavior and performance is not fully developed. There is not yet sufficient theoretical understanding within the diverse NGO sector. Innovative approaches and further specific information will contribute to the ongoing dialogue in the development of the theoretical, conceptual and analytical understanding of NGOs. Conservation and development NGOs are among the most recent natural resource management arrangements to emerge. Through the in-depth analysis of a local level conservation and development oriented NGO – the Ranthambore-based Jay Shambhu Conservation Movement (JSCM), this

study helps in contributing to the understanding of NGOs and their role in natural resource management.

In 1988 the Bay Islands Conservation Association (Asociación Para la Conservación Ecológica de Las Islas de La Bahía) (BICA) was founded with concerns about the islands' fragile natural resources. The Association's long-term mission is to create conservation efforts and provide economic opportunities for Bay Islanders and to the countries maintain the integrity and health of the Bay Islands (Casselman, 1991). BICA implements a variety of programs and engages in a number of activities in order to make progress toward its long-term mission. The balance of this case study is devoted toward a brief understanding of BICA and most general conclusions drawn from this understanding.

System Statement

NGOs, particularly local organizations, are critical, increasingly important, and relatively overlooked players in the sustainable economic development and natural resource management sectors. Local NGOs are often the vehicle for their emergence and persistence, the type and extent of authority they wield, their functions, the type of community within their membership, and the capital available to them. The structure, behavior and performance of local NGOs are seen as being highly "site specific." They are dependent upon the political, legal, economic and cultural institutional context, and the natural resources have to be managed. Greater understanding is needed for stakeholders to take advantage of the role that NGOs can play in the effective management of scarce resources. During other periods under the practical understanding of NGOs can be enhanced through the development of conceptual methods designed to better reveal information, the provision of specific information to facilitate the development of general theory and the provision of practical advice to particular organizations, governments and others.

The Bay Islands Conservation Association implements programs in an attempt to meet its objectives. BICA was formed and functions within the natural resource trust and institutional context of the Bay Islands. However, BICA members have volunteered their scarce resources, time and effort toward the achievement of broad-based economic management and sustainable development objectives for the Bay Islands. While BICA members maintain a deep knowledge of their organization and the Bay Islands, they may not understand, collectively, how their organization works collectively. An in-depth analysis of BICA will provide valuable information to BICA members. This case study will also contribute to the information available to others interested in the performance of BICA, and of NGOs in general (governments, exporters, other NGOs, and development)

Conceptual and Analytical Framework Underlying BICA

Within economic theory profit-making organizations contribute to more products are created through the theory of the firm. Economic theory are used to produce value providing goods and services to customers who demand them. Traditional economic firms are motivated to maximize their net revenues via the production of these goods and services to other firms and consumers. Analysis focus on the relationships between the resources flows that the organization is able to command as inputs and their conversion into profit producing outputs via the organization's productive processes.

Traditionally, non-governmental not-for-profit, voluntary organizations have not been analyzed within this conceptual framework. The observed phenomenon may be due to the disciplinary bias of analysis (political economy theory). However, it may be due to the perception that the model/benefit of NGO behavior commonly fall to those who are not members of the organization. NGOs that exhibit the external motivation are perceived and behave differently than traditional economic organizations. As a result, the first Commonwealth Organization (CO) awarded

to describe an extensive phenomenon (ecological structure) as individual economic segments but distinct in its focus on the extended social implications of its behavior. Just as an economic organization can be analyzed as an economic firm, a CO can be analyzed as a Communication Firm (CF).

Conceiving of BECA as a CO analyzed as a CF, a hybrid research methodology adopted three ethnographic methods: a relevant to understand the Association. The methodology combines the interdisciplinary of BECA through the case study approach. It also intent to take advantage of the educational benefits of participatory methods. Finally, the research methodology takes advantage of the robust predictive power of traditional quantitative methods and the potential for abstraction and generalization from the derived results.

The methodology is implemented in two stages: a primarily inductive stage followed by a primarily deductive stage. In the inductive stage, tools of institutional and non-institutional observation and participant and non-participant observation are employed. BECA members and nonmember residents of the Bay Islands are participating along the relevant aspects of BECA and the institutional environment of the Bay Islands. The research interview process uses the information provided by a sub-sample of BECA members and the descriptive and predictive variables found in the literature to construct a customized formal and survey. The formal survey is implemented and analyzed in the deductive stage of the methodology.

As a direct result of member participation in the formation of the survey instrument, a dialogue is opened to facilitate objectives self-assessment of BECA and its programs. A focus is placed on reflect on the performance and potential relevance on BECA and identified by more traditional partly-deductive approaches. A customized survey design addresses BECA's particularity specificity. Using the variables found in the literature as an initial point in the model formation stage provides the potential to contribute to the existing literature and demonstrate the number of iterations

necessary to carry out an appropriate formal test. Using the incident membership as the sample population allows for both the deep descriptive detail provided by a case study approach and predictive results facilitated by quantitative methods.

Hypotheses and Outcomes

Hypotheses and algorithms can be derived to guide the analysis of this research (Table 1-1). Due to the research design, some hypotheses are supported or refuted through the application of traditional statistical methods, while other proposals are evaluated only through the weight of collected qualitative and anecdotal evidence.

The methodology assumes that RCA members can access aspects of the Big Ideas unit of RCA that might potentially influence its performance. The analysis of RCA is based on the premise that organizational on-the-ground operations can be successfully analyzed within the accepted framework of the economic theory of organizations. As a result, RCA is conceived to be composed of inputs, managerial features including structural and behavioral characteristics, outputs and selected outcomes. If this assumption is valid, then analysis will reveal a relationship between RCA's inputs and its outputs (H.1) and between its structural and behavioral features and its outputs (H.2 and H.3, respectively) (Table 1-1).

The traditional economic theory of organizations is adapted to include selected influences of RCA's broader context of its membership. These broader external or social influences are termed RCA's external outcomes. If this adaptation is valid, then analysis will reveal a relationship between RCA's inputs and selected outcomes in the broader community (H.2) and between its structural and behavioral features and these outcomes (H.3 and H.4, respectively). Further, RCA is conceived to implement its program such that its broader social goals might be realized. As a result, programs must not only be effective, but they must be appropriate in reaching RCA's social goals.

If the assumption is valid, then analysis will reveal a relationship between both the quality and the appropriateness of BICA's outputs with its intended outcomes (H.1 and H.4)(Table 1.15).

Table 1.1: Hypothesized Relationships Highlighting the Performance Features of BICA.

H.1	A relationship exists between BICA's inputs and the quality of its outputs.
H.2	A relationship exists between BICA's inputs and the achievement of its intended outcomes.
H.3	A relationship exists between the quality of BICA's programs and the achievement of its intended outcomes.
H.4	A relationship exists between the appropriateness of BICA's programs to its overall mission and the achievement of its intended outcomes.
H.5	A relationship exists between BICA's structural features and the quality of its outputs.
H.6	A relationship exists between BICA's structural features and the achievement of its intended outcomes.
H.7	A relationship exists between BICA's behavioral features and the quality of its outputs.
H.8	A relationship exists between BICA's behavioral features and the achievement of its intended outcomes.
H.9	A relationship exists between the structural features of the institutional context of the Bay Islands and the quality of BICA's outputs.
H.10	A relationship exists between the structural features of the institutional context of the Bay Islands and the achievement of BICA's intended outcomes.

In addition, the analysis of BICA is based on the premise that the institutional context and external forces from whom local representatives carry out their programs influence their program choices and their performance. If the assumption is valid, then analysis will reveal a relationship between structural features of the Bay Islands and BICA's outputs (H.9) and its intended outcomes (H.10).

Having a series of hypotheses will facilitate the evaluation of these hypotheses and an understanding of BICA. In order to identify the potentially important issues surrounding BICA's performance, it is first necessary to provide a description of the chosen features of BICA and of the Bay Islands (Chapter 2). In order to merge the information found on the literature on WQO's with

information about HCA, it is illustrative to describe the conceptual and analytical issues from which HCA will be analyzed and understood (Chapter 3). In order to reveal information about the features of HCA and the key islands which potentially influence the Association's effectiveness it is necessary to develop and employ a useful regional research methodology for analysis (Chapter 4). Compiling and reporting the analysis of the revealed information will highlight the results of the research including tests of each of the formal hypotheses forwarded (Chapter 5). Discussion of the implications of the revealed information in light of observations developed through the research process complements the analysis (Chapter 6). Finally, closure is provided through recommendations for potentially enhancing HCA's effectiveness and direction for further research (Chapter 7).

The overriding goal of this study is a deep understanding of HCA. The case study provides the most information to HCA and its members. However, it is expected that the information gained about HCA will be helpful in understanding what organizations like are similar to HCA. In addition to HCA members, local, regional and national governmental officials, researchers, and international partners are likely to glean useful information from this work. The proposed conceptual and analytical approach and the derived hypotheses and objectives of this study contribute to the resolution of the two central research questions of this work: (1) What are the impacts of the key islands which influence HCA? And (2) given its context what are the impacts of HCA which influence its performance?

CHAPTER 1 THE BAY ISLANDS COOPERATION ASSOCIATION, THE BAY ISLANDS, HONDURAS

Introduction to the Island's Past, Present, and the Bay Islands

The Bay Islands Cooperation Association was formed by a group of islanders concerned with the well being of Bay Islanders and the fragile flora and fauna of the Bay Islands. BICA, the only nongovernment organization for the management of marine resources, has been able to take opportunities and constraints provided by the institutional context and natural resource base of the Bay Islands. BICA's growth, activities and performance is a result of its interaction with these features of the Bay Islands. Presented information is derived from secondary data sources, semi-structured interviews of BICA members and other Bay Islanders, and participant and nonparticipant observations activities.

The Bay Islands, Honduras

This section addresses the complex contextualized nature which makes the Bay Islands unique. It lays the groundwork for needed to understand the features of the Bay Islands' institutional context and the natural resource environment which potentially influences the features, evolution and performance of BICA. This section considers the Bay Islands' socio-cultural attributes including education, its economic conditions, geography, physical characteristics, and natural resource conditions and influences.

Physical Context and Climate

Several aspects of the physical and natural environment of the Bay Islands primarily influence BICA. The physical and natural resources environment defines the range and potential of economic activity. These environments dictate the impact of human behavior on other natural and human habitat behaviors. Local natural environment management needs and resources are derived from these systems. In general, the physical and natural resource environments provide the opportunities and pose the constraints to human activity and, thus, human efforts to manage them.

The Bay Islands are located about 16 km off of the north coast of Honduras (see Map Appendix C). The Bay Islands constitute the northernmost section of the northern department (state or province) of the country of Honduras. Of the eight islands and seven atolls comprising the archipelago, Roatan is by far the largest and most populated. Among the three principal islands, Roatan comprises 71 percent of the total landmass (11,740 ha, or 33.5 % ha.) and two-thirds of the human population (36,000 of 54,000). Guapala's population is 6,000 (25%) on a total area of 1,610 ha (21%). Uta suggests a population of 1,000 (2.7%) on 4,100 ha (11.2%) of Uta (Colaboración Hondureña, 1992).

The climate of the islands is tropical and very rainy with an average reported temperature of over 27°C and an average humidity of 85%. Roatan is average 150 days per year with two-thirds of the annual volume of rain (about 140 cm, or 1.1 m) falls between October and January (Colaboración Hondureña, 1992). Sea surface temperatures generally range from 26 to 28°C (Gardner, 1979). In addition, in the past 100 years the islands have been hit by at least 15 hurricanes (over 100 km/hr) and a number of tropical storms (63-117 km/hr) (Colaboración Hondureña, 1992).

Degradation of Marine and Terrestrial Resources

The marine and terrestrial ecosystems of the Bay Islands show high levels of degradation due to various forms of human and resource and mismanagement (Cabrera-de Soto et al., 1993; Haylock-Saunders et al., 1994; Vega et al., 1995). The Government of Honduras (1993) reports that the principal reasons for difficulties in maintaining marine biodiversity are the destruction of habitat, the extraction of dead coral and sand for construction, and overfishing or overhunting of commercial species. The primary cause of terrestrial environmental degradation is the total absence of pasture on noncultivated land (Vega et al., 1995). Haylock-Saunders et al. (1994) present the decrease in fish species, deforestation, removal of garbage and human waste, water stress, tourism development and increasing stress on the fragile marine life as the principal areas of concern for the long-term development of the Bay Islands.

Coastal land use

Vega et al. (1995) estimate 50 percent of Roatan and 13 percent of all the Bay Islands were planted. Only 8 percent of Roatan and the Bay Islands are well forested for pasture. Over 50 percent of the Islands had been cleared within the last fifteen years. Clearing has been either for pasture land or tourism development. Only 2 percent of the Bay Islands remain as primary forest. Forty-four percent (3-400 ha.) of the land on Roatan is an secondary forest.

Approximately 442 ha. of land and water management are located in the east of the island between Roatan and Santa Elena (private) (Haylock-Saunders et al., 1994). Mangroves are a common source of firewood and building material. The majority of Bay Islanders work with wood (Cabrera de Soto et al., 1993) and 60 to 80 percent of the houses are wooden while 10 percent are made of cement (Haylock-Saunders et al., 1994). Most houses rest above the ground to prevent mud and water entry in houses. Much of the timber for house construction is exported from the mainland.

Vega et al. (1995) find that 43 percent of the Islands including 83 percent of Uru, 61

percent of Olanipe, and 28 percent of Ikere, should be placed under strict reserve conservation measures due to their physical characteristics. An additional 75 percent of the total land area is cited as appropriate for other reserves (7 761 ha.) or reserves (2285 ha.) forestry development. Managed forestry development would provide a local source of construction materials, reduce price and financial dependence upon the outside for raw materials. A full 83 percent of the land area on the Bay Islands is recommended to be managed as one of the three land environmentally sensitive land use: natural/forestry, sensitive forestry, and pastureless, respectively. This would include 81 percent of Bonin, 65 percent of Olanipe, 82 percent of Ujae, and 73 percent of Barbuda (Barbuda), 82 percent of Santa Rosa, and 100 percent of Midway (from island east of Bonin) (Page et al., 1993).

Land use consistent recommendations with forest recommendations include land use primary forest, secondary forest, mixed forest, woodlands forest, mangrove and swamps. Currently, 59 percent of the total land area on the Bay Islands are one of these are categories. A land 83 percent of the land area of Bonin, 44 percent of Olanipe, 71 percent of Ujae and Barbuda, 74 percent of Santa Rosa, and 57 percent of Midway are used as one of these ways (Page et al., 1993). Generally speaking, a significant reduction in pasture land is required according to these recommendations.

Agriculture

Land appropriate for agriculture on the Bay Islands is quite rare due to poor and shallow soils and steeply sloping hills. Flat areas tend to be swamps. Except for eastern Ujae, Diamond Rock in the north-eastern part of Bonin and Rosemont Heights on Olanipe, such land is to be low-land only (very red) and sandy to clay. Soil water table depth of 30 cm to 60 cm (shallow). Less than 3 percent of the total land area is appropriate to use as natural crops. Another 5 percent could be used for permanent or semi-permanent crops. Though rather marginal, Ujae shows the greatest potential for agricultural production due to its relative (Bonin and Barbuda) soils (Noyes et al., 1993).

The principal agricultural products (yams, cocoyams, bananas, mangoes, and avocados) are predominantly for personal consumption from small private holdings. Distinct from the wealthy north coast of Honduras, over 90 percent of the land in agriculture is privately owned as opposed to ownership by public corporations (Fayleth Sanchez et al., 1996). About 60 percent of the private agricultural holdings are less than 3 ha. About 30 percent of the farms are between 3 and 15 ha. Eighty percent more 1/3 of the holdings are greater than 15 ha. (Coleman de Honduras, 1992).

Reports recommend that Bay Islands adopt the food seed-to-let agriculture by increasing their production of annual crops for export substitution and potential export. Suitable annual crops include watermelon, green peppers, yams, corn, tea, beans, radish, ground, and cucumber. Suitable perennial or semi-perennial crops include guava, papaya, guadua, mango, citrus, and plantain (Saps et al., 1992).

Water and waste management

No general water works system system is in place in the Bay Islands. About 70 percent of Islanders use latrines. Most homes simply directly into the sea. The majority of Bay Islanders have septic systems. Twenty-one percent of the homes have no system for eliminating human wastes; whatever is excreted is a defective road and effluent seepage contaminating local and island water sources (Coleman de Honduras, 1992).

The Fayleth-Sanchez et al survey (1996) finds that 40 percent of respondents claim their drinking water from (small) private-oper wells while the rest pay for a fee from a municipal municipal-refillable tank. Fresh water can be a very scarce commodity. In general, Islanders report that it is far more common not to have water for the afternoon and early evening hours than to have it. The water from private wells is often highly saline. It must inconvenience the people to be without water from the municipal tank for days or weeks at a time.

In a related sense, the principal causes of death due to disease are Malaria (56 percent), Dengue/Fever and respiratory illnesses (Bjorklund-Sundberg et al., 1999). Several cases of Cholera have been reported. One caused by high concentrations of bacteria were in the run-off from tropical storms. Malaria, Dengue Fever and Respiratory are the common diseases/illnesses associated with deforestation that he and several researchers say of them. Another illness stated that he and others at most they telling upon the village people in the Bay Islands, however.

Deforestation has disrupted natural water flow and exchange in the ground that all streams on Exumas usually run dry. Increases in deforestation have led to increases in the amount of soil and organic material that runs off of the land and into the sea after every storm. The run-off endangers food productivity and water supply. Deforestation is a common result of road development and farming the pasture land. In addition, people commonly export wood to Antigua whereby by "improving" it, usually including burning it off vegetation.

The food-water situation has deteriorated to the point that Bay Islanders export fresh water from Miami and Tampa, Florida. The chief contributors to the need are salt water intrusion, deforestation, the steep slopes and sandy soils of the Bay Islands and recent increases in human population (Johannes de Beaulieu, 1992).

Marine resources

Increases in run-off hastened by deforestation disrupts natural sedimentation and transportation in the waters surrounding the Bay Islands. This has endangered the health of the coral reefs and the other marine species that depend upon the reefs. The water generally transports algae to blue-green, can be opaque and turns to a dark color to follow them down following a strong rain storm. This water supports cloudy brown algae and polychaete worms. The reefs are suffocated by the type of marine smothering from the run-off. Clarity water, better diving reefs and sea grass are caused by the environmental impact of extensive landward development and use of the resources from,

A 1993 study (Dobson de Andrade) indicates that as much as 50 percent of the reef at West End, Belize is dead. It is reported that all damage has occurred over the past ten to eight years. Local fish markets believe that their fishery provides reef damage. They estimate 50 percent dead and 50 percent damaged in a depth of about 20 meters as a more accurate reflection of the recent human impact on the reef. While quantitative bleaching was a primary topic of investigation in the 1993 study, there was depend on the circumstances of the reef for their findings. Opinions are mixed regarding the cause of the phenomenon. Many have attributed it to unusually high water temperatures (over 30°C) during the dry season of 1993.

The causes of reef damage as decreasing water of magnitude are increases in sedimentation, eutrophication, chemical contamination, loss of degradation of associated organisms, direct physical destruction, contamination from solid waste and harmful fishing practices (Dobson de Andrade, 1993). Personnel of the MDC, Asociación Pro-Desarrollo de la Isla de la Esfuma (APRODES), another private for profit, Institute of Marine Sciences (IMS) concurs with the opinion. However, many of the dive masters and local divers believe that harmful fishing and diving practices are having a more significant impact on reef health than several of the other factors.

Protected areas and endangered species

A system of protected areas based on the International Union for the Conservation of Nature's (IUCN) system has been established in Honduras. In addition, endemic populations of local fish and flora which have helped water parks and other areas have been granted special protected status. These steps have been taken in order to enhance the probability that selected species and fragile ecosystems will survive and thrive for future generations of Bay Islanders.

Since the 1970s some natural and artificial protected areas in Honduras have been established by municipal initiative in the Bay Islands. Vega et al. (1993) mentioned that 12 areas in

¹ Appendix 1 lists the English names of the organisms and abbreviations used in this study.

the Bay Islands be protected for the long-term maintenance of biodiversity. Four areas on Uthmaniyah Island are protected due to their importance in the continued health of the marine systems and their potential for tourism. The protection of the areas on Rastan is recommended in addition to the Island of Buthaina. The areas on the mainland share biodiversity objectives aimed at the potential benefits to the tourism industry and the stability for provision of a sufficient fresh-water supply to support tourism activities on the island. Two areas of Qasaba are set-aside for protection under the fresh-water conservation and ecological biodiversity objectives.

Some of these areas are already protected by local authorities and require national recognition or physical delineation for practical protection. In the last 10 years protected areas in the UAE include the designation of several highly sensitive areas has been changed by local authorities (one on Rastan) or presidential decree (one on Qasaba and two on Uthmaniyah). In addition, the Marine Conservation (MC) is monitoring the position of Buthaina from the current coast, as indicated.

In 1993 a Government report from visiting Uthmaniyah Islanders was for the scientific community to focus on the Island and two new species in the world, a frog and a gecko, while studying the endangered Uthmaniyah Island species (GCC-Uthmaniyah, 1993). In the Bay Islands 16 species and 2 subspecies are endangered or are threatened with extinction (Nagar et al., 1991). Species status is due to the destruction and fragmentation of terrestrial wildlife habitats and hunting for personal consumption and for trade. Two of the reptile species and both of the fish species are endemic to the Bay Islands, the Rastan parrot and the rose-crowned warbler, the Bay heron and the Shearwater, respectively. Endangered marine species due to fishing restrictions and destruction of habitats include queen conch, lobster, black coral, and mangroves (Nagar et al., 1991). Two endemic species that have shown their adaptability to changing habitat conditions: the Rastan Island Agama and the Rastan Island Sparrow, have been able to maintain stable population levels (Gardiner, 1991).

Three other species were once in the islands and locally extinct, the manatee, two species of boobies, and two species of terns (Page et al., 1993, Curran, 1995). In addition, the Caribbean monk seal, formerly found in the islands, is globally extinct (Page et al., 1993).

The People and Culture of the Five Islands

Several aspects of the culture-based institutional context of the five islands potentially influence factors of WCA. Ethnicity, social heterogeneity, education, and religion influence individual and aggregate human behavior and, therefore, may have an impact on the formation, persistence and performance of voluntary organizations.

Socio-cultural and ethnic/human issues in tourism and

In the mid-1970s the ethnic and cultural profile of the islands reflects the Afro-Caribbean status of the majority of inhabitants: the Afro-Caribbeans of the "Caribbees," "Islanders" or "Jamaican" Indians, a remnant of the descendants of British colonists/slaves (Anglo-Africans), the increasing immigration of Barbadian mainlanders (Spanish, and "mixed" Barbadian descent) and "gringos" (Anglo-Americans) to the islands (e.g., Goodwin, 1978, Page et al., 1993, Reynolds-Enafole et al., 1994). Each group has its own language, culture, customs, social hierarchy and voice in the local economy although boundaries are becoming increasingly blurred (The Government, personal communication).

The current tourist market has remained and has continued to be relatively well educated and wealthy by local standards. They are active in the formal economy and relatively inactive in the informal economy of the islands. Many have settled within the past five years, while some have been residents for as many as 50 years. They are generally considered to be the wealthier segment, successful in their professional pursuits in coming to the islands than a usually the case. Their impressions are not necessarily brought into local society. As a result, white-skinned people tend to be charged more and are frequent targets for police "bribe" requests. The tourism police recognize that

group is "What to know how to make a small change in the tiny islands? better with a large better?"

Nature/biology and mathematics constitute the largest economic contribution to the islands. Hayashi/Gardner et al. (1994) find that they are a roughly equal proportion and that the majority of immigrants have been students for more than a decade. Accidental or direct evidence that the government systematically overstates the integration of mathematics into island society

The role of immigration has resulted in some minority among islanders of Afro-Antillean descent, mathematics and others. For example,

There is perhaps less contact for evidence between islanders and the island people. The islanders (English/Chinese and Spanish/English/Indo), the cultural differences, and the lack of communication have all contributed to a cultural divide. By their communication with others, the Chinese/Indo and the United States, and their retention of the English language and mathematics, most islanders have cultural differences from the islanders' culture. (Gardner, 1999, pp. 129-131)

"Spanish speakers are not islanders. They are Americans. There is an important cultural and cultural difference" (Afro-Antillean/Indo/Indo personal conversation). "The islanders are Spanish. They won't work. They are really disorganized. They just like to see what happens here or to do it" (mathematics/immigrant, translated from Spanish, personal conversation). In general, most islanders are not interested in their work ethic, while mathematics have a reputation for hard work for less pay. "It's a cultural thing. They just don't seem to understand what is required of them or how to do a good job" (mathematics/mathematics/mathematics personal conversation).

Islanders contribute more resources to mathematics/mathematics, increasing cultural contributions often over mathematics (e.g. social sciences) are more in contact between most immigrants from the mainland and other islanders. Islanders do not believe that mathematics is more in the mathematics/mathematics contribution, influence of mathematics/mathematics, or in the mathematics/mathematics contribution of mathematics.

The most socially and economically powerful group is made up of a single group of three

from 15 family units (maybe 10 units). Apparently they make their fortunes from either fishing or shipping. More immediately apparent would be some form tourism related industries. In the Bay Islands' gastronomic, there are remarkable reports of 40 pesos paid from the short drug trade. These families tend to take an interest in different business ventures including construction and building, supplies, import/export, retail hotels and restaurants and bars. Several have taken their role in the political leadership. However, they have entered into politics, often making their fortunes, rather than losing. The latter is more customary in the mainland.

These families are thought of as being exclusively of Anglo-American descent, but they are not. They have a great deal of influence in relation to the island when they are in mainland. Clearly illegal construction projects by companies owned by these individuals were destroyed. However, an increasing evidence of my unethical behavior involving potential evidence and any of the potential families was found.

Influence of Religion

Western Judeo-Christian philosophy are prominent in everyday life. Any value based on the street is likely to feature a throughout greater meaning toward the word of the Lord in English and Spanish, normally 24 hours per day. At noon every day in Cozumel, Mexico, local brothers of the cloth preach in the townsquare. On Cozumel, the Seventh Day Adventists maintain a particularly strong presence. Even when going fully it always extending activities to proper marriage. The main message is often filled with gospel music emanating from a house of worship. The presence of the Bay Islands is a frequent message. There are also significant populations of Methodists, Baptists, Catholics, and others present in the Bay Islands. The majority community does not appear to be active in religious life in the islands.

Featuring Islanders' initiatives

Among the seven Bay Islands there are five examples of enterprising associations and organisations outside of the church. There is a Chamber of Commerce, several women's social clubs and groups of Women and Lear's clubs. However, these voluntary organisations are completely oblivious to any real involvement leading to the conclusion that these organisations are inactive.

In the mainland "parish areas," community councils are literally managing everything from fresh water to after school programs. Parish areas have provided efficient forms of local management in Barbados since about World War II. However, in the Bay Islands they have been relatively inert since then. They are used after broadening migrant communities and have had the greatest success in education (George's Bay, personal observation).

Land issues and settlement patterns

The pace of change is great on the Bay Islands. Traditional land tenure and settlement patterns are being challenged due to changes in access to education, increasing influence of outsiders, and great changes in the supply and demand for infrastructure and services public services. Traditionally, in addition to the immediate family of the land owner, all of the land owner's sons' families share the same piece of land. When a man marries, he builds a house on his parcel land. When a daughter marries, she moves to her (usually nearby) husband's family's land. If more land is needed, people moved from land every five or ten years and the bills. This extended family maintains a place in the family unit. Most migrants are managed communally within the extended family structure (Marilyn Bayly, Alan Allen, and Thomas, both, personal observations). The system is intended to have been profitable in looking jointly for expanding flows, generation of large families and increased land development.

Land that was formerly considered like much of a typical island family of eight or ten century ago is now required to support many times more people due to the families of the unit.

family holdings are eroded and degraded. Over-building and clearing is causing runoff of soil and water into the water. The family wells are becoming dry or saline. Land speculation within the last decade, primarily facilitated by a wave of “foreign” developers, has fragmented almost all of the available land (Koburn-in-Henderson, 2002). As a result, expansion of existing family plots is no longer possible and changes in traditional land tenure arrangements are pending.

The impact of the changing land tenure system on the landscape is evident due to some of these dynamics. Foreigners – who are not developers, tend to buy larger pieces of land and build large (by local standards) single houses with some sort of plumbing (including septic) systems, and septic systems. Sometimes they divide the land, sometimes they live in the islands full-time, when they don’t. By virtue of being that a developed country they use the more expensive per person than Islanders. However, they tend to house fewer people per house and tend to be more careful about disposing of their waste than an average Islander. “Before the ‘foreign’ started buying that land, there were companies all along that beach. Now look at it – nothing but sand. One good thing about the foreigners though, they buy big chunks of land as an investment and then don’t spend more than a few weeks or months in it a year – (S) take development off of the land” (Mandyu Sayyib, personal communication).

Foreigners buying the landscapes, so that some of them was/land available, it would be beyond the reach of most local people. Land prices, not to say values, are so high that Islanders with decisions on land-use problems are impeded or will be family land. Foreign investors purchase land for personal use or business development. Foreign investors may promote environmentally-friendly development (in general, reportedly – did in Belize) as they may advocate environmentally sustainable dwelling and smart design. However, business development poses its a hindrance for sustainable development from the perspective of the natural environment.

Frasing of roads (supported by UNDP) has facilitated access to health care and opened development to the the residents of the island of Bontoe. Road works have changed settlement and economic patterns and the various religious of distant islands communities. Largely, traditional land transportation has been replaced by imported motor cars and trucks. The smaller communities are commonly defined along ethnic or area boundaries and are used to have distinctive customs from communities from other islands apart.

Education

For most students, education of children and job training for adults are significant local concerns. Local schools and churches are among the most important institutions from which local professions, skills, norms of conduct and behavior (social) education development are promoted (e.g., Swales, 1991b; Lord and Swales, 1992). Local NGOs run 18 gaps in job skills and knowledge that formal education and the church have not traditionally addressed.

The level of education in the Bay Islands is low by international standards. By national standards, it is better than average. In 1992, about 30 percent of the residents of the Bay Islands were literate compared to 22 percent in the mainland (Coleman de Chazotte, 1992). However, in 2000 only 12 percent of Bay Islanders were reported to be literate. The increase in literacy in the Bay Islands is more than a factor of two from the level of uneducated immigrants from the mainland. However, in view of the significant influx of new educated residents from other countries and the mainland, the immigration factor is disturbing. A realistic picture of Bay Islands appears to be accurate. However, no figures are available for the island.

Increasingly in the Bay Islands, like in other countries, education level influences social class. While some members of the more affluent families have received secondary level education, large proportions of their children, even in their 20s and 30s, have finished secondary education. The generation is beginning to take over family businesses. This class based education dichotomy is

readily observable. For example, several people asked whether Florida was more Mexican. An equal number, perhaps, said "Oh, I am a better bet." (I must introduce school doors. You going to be here for the 1991 game?"

As of 1991 there were 11 primary schools, 13 teachers and an average class size of 23 students (Johnson de Henderson, 1992). School attendance is mandatory and flows through the grade levels, from kindergarten and transportation costs. On some days when no school, people in their last session and only during primary will of their child, grade diploma.

After graduation, local children have the option of becoming a teacher. They can be taught at the local school during their year of study. For example, someone who school takes four years, or through the grade levels, while someone who school takes six years, through the grade levels. The last two years must be paid for by the student's family or a sponsor. One of the local colleges charges 13 languages (1992) 100 per student per year in addition to 13 languages in at the end of the year, annual costs. In 1992 there were seven secondary schools or "colleges" in operation. Six of them were private (Johnson de Henderson, 1992).

The proportion of all children attending school is not available. Teenagers report that "most" of their friends attend one of the local colleges through the grade levels. The Government of Honduras (1992) reports that Bay Islands tend to enter the job market much later than mainlanders do (age 14-15 vs. 14-15). Assuming that, on average, teenagers are either working or in school, it may be inferred that children are staying in school longer on the islands than on the mainland.

The language of instruction is Spanish in the local schools and bilingual education is available through several private schools. The education system and the increasing amount of interaction between the mainland and the islands have resulted in a sharper shift in the local language. The remainder has evolved from primarily Caribbean English and secondary Spanish to equally-variant use of the other, or both in the same form. For example, not-teacher are always

"bellows," "big" or "small" or even "plate." A phonetic version of a commonly heard phrase could be "Pia, mola, li kany-may mola."

A local NGO, the Kany-Bay Islander Professionals Latent Association (KABIPILA) is involved in a national movement to get special status in governmental decrees for English as the native language in the Bay Islands. With the unlikely granting of this status, the language of instruction locally would be English, leaving Spanish to be taught as a required course. Additional benefits in the curriculum are also allowed. The Ministry believes in the mainland have this special status allowing them to better connect their traditional language and culture.

Another local NGO, APB/CDB, focus and maintains an educational priority school in Sandy Bay. It has trained a number of undereducated women from a mathematics foundation. Local people are encouraged by APB/CDB to develop their talents and, hopefully, mathematics skills (Doris Cho Chan and Nelson Perkins, personal communication). BECA also engages in a number of skill and job training education (presented here in this chapter).

Recently, a Bay Islander was selected over El Salvadoran, a renowned Central American agricultural university located in the southeast of Honduras. He stands as a full scholarship recipient in Honduras. The scholarship had been available for three years before a qualified candidate was located. Some islanders criticize the observed inability for Bay Islanders to compete effectively with mainlanders in the national university level in language differences. Other islanders think cultural norms which have not, traditionally, valued education.

Overall, 3 percent of the population has completed college (high school/technical school in the U.S.) and less than 1000 people are adequately prepared for technical work. One in 1000 Bay Islands residents has earned or pursuing a university degree (Education in Honduras, 1992). Given the size of the population there, figures translate into about 2000 college graduates, 150 prepared for technical work, and 500 trained as technicians.

The Economy

Although the discipline of economics is what would be called of interest, the Bay Islands economy could be considered to be a part of an island-based national system. Here, it is considered distinct from other Caribbean nations due to the distinctive regulatory aspects of the economy may have on the formation and performance of EBCA. A reader argument is stated with regard to the legal/governmental context.

Most economic activity of the extended family appears to arise into the formal economic sector. However, there is already informal economy of island challenges and community level labor paid per day. The principal economic activities in the Bay Islands are fishing and tourism and the industries associated with these sectors including, for example, ship building, construction, and insurance services activities. Provided by business production at the time of the twentieth century. Fishing has been the traditional economic activity of this islands. Over fishing and competition from the newly established Bahamas economy resulted in a marked decrease in the importance of fishing in the economy. The decline in fishing was accompanied by an increase in tourism and its associated industries as a primary local economic activity.

Wages are considerably higher in the islands than in the mainland. Income in the fishing and tourism activities are significantly higher than in agriculture. However, the cost of living is significantly higher as well. For example, the estimated cost of food for a family of five on an annual basis in the capital city of Tegucigalpa is T237 (approx. \$237 (1,400 dollars)). In French Harbour, Belize the cost is estimated at 13,000 lempiras (3,000 \$,000 (1,000 dollars)). In Cozumel (Belize), Belize the figure is 14,000 lempiras (\$280,000 (1,000 dollars)), or about twice as much as it would cost in the capital city (Tegucigalpa, Honduras, 1992). However, people who live in the capital probably cannot grow/pick their own vegetables or collect their water from the sea. A typical shopping basket in the capital may not already resemble one in the islands. In addition, it is

difficult to get a sense of the total value lost of being vulnerable to understanding of the surrounding economy.

Tables

In 1993, the drapery industry produced 4.2 million metre long and wide yards (25.7 million lampas (about US\$20 million 1993 dollars)² and in 1991 these figures were 8.8 million metre long and 25.6 million lampas (about US\$47 million 1991 dollars). The majority of the loss occurred in a drapery, comprising 14 million metre long style yards in 1991 (Gibson & Pindham, 1993). Fishermen noted that the 1994 drapery and fabric markets were outstanding by contemporary standards. They were neither very tradeable nor, however. The 1993 season was good, but not as good as 1994 (Bay Islands Fisheries, personal communication).

The drapery season opens on July 1. A drapery boat typically goes to sea twice in a six month period with a one week rest/stock between trips. During the peak of a good season boats report harvesting 20–30 lb. between a day. Harvest is the time to spot, fishermen report harvesting as low as ten boats per day in sufficient quantity to allow fishing. In 1993, there were five main drapery boats then/boats ago. The range that boats are closed to fish is much greater than in the past and the season got lost on declining. The pace at which daily harvests drop from high to progressively lower at each quarter (disaggregated historical rates (Bay Islands Fisheries, personal communication).

Drapery boats are expensive have one motor whose driver installed one then drag into. Fishermen noted that it is common practice to tow the drapery together or plug up the draperyman when making their catches. It is common to operate the low drapery. One fisherman, who also made capturing IP as well as one fish, reported being paid US\$2,000 per net that was not fixed

² Lampas/yard (1994, 4.52, 1994, 5.44, 1992, 5.44, 1993, 5.26, 1995, 5.30, and 1991, 5.18). Source: Gibson & Pindham, 1993 for 1990, WorldTable, 1993 for 1991, 1993 and personal communications for 1994 and 1995.

with the forest which fishing (illegally) is/has always taken. When queried about enforcement in Honduran waters, he could only laugh.

The lobster season opens August 1 and like the shrimp season, it never ends before it starts. The lobster industry is quite distinct from the shrimp industry. Shrimp harvest appears to be geared primarily to facilitate the Honduran market while the lobster industry attracts significant attention from buyers from other nations (e.g., Jamaica, Nicaragua). Harvest is not spread-out all quantity, but, accumulation of boats in acceptable fishing practices (Shrimp: fish, personal observation). Monitoring and enforcement of such groups will however be complicated by the number of unlicensed boats and the potential presence of multiple harvest.

Lobster fishing employs diverse. Traditionally lobstering was a low shrimp activity. Recent changes in the laws allow divers with/under or "boiler divers," bringing many more lobster into harvestable range. Lobster-fishing was extremely important source of income for communities of Mosquitia-lobster on the Honduran coast. With limited water safety precautions, dangerous diving practices result in many cases of serious disease after landing and greatly limits among divers. In one week of December 1994, one dozen Mosquitia-lobster were admitted to the Boston Hospital for treatment for the lungs. A subsequent report of harmful diving practices resulted in a moral hospital of the Red Lobster restaurant chain. Red lobster is a principal target of Honduran lobster (food store markets, personal observation).

Boat sizes vary greatly carrying anywhere from 1 to 100 divers per boat. A small boat (4-6 divers) was reported to catch in another 1000 pounds of lobster (315000) in 1994 the first was ever made any. In 1995, 100 tons of high quality were sold for about 100,000 lempiras (US\$ 17,000) (Shrimp: fish, personal observation). Prices are similar to the shrimp industry with lobster divers earning a lot more daily than shrimpers. However, the shrimp season is profitable longer than the lobster season. Apart from the commercial shrimp and lobster boats, approximately 10-15 million

species (including groups: snapper, barramundi, wrasse, sea, and snail) are harvested principally for personal or local consumption (Haylock-Baileys et al., 1994).

Currently, 33 percent of employment is directly or indirectly dependent upon the tourism industry (hotels, restaurants, retail and tourism services) sectors, 33 percent of labor is in agriculture and fishing, respectively (Haylock-Baileys et al., 1994). This indicates a significant departure from sector studies and a direct shift out of fishing and into tourism over the past decade (e.g., Topp et al., 1980 and Quiroga de Rosales, 1992). However, these two principal economic activities are relatively complementary in their seasonality. The pace of integration for employment outside of the fishing industry is rapid and underemployment is traditionally high in the formal sector of the Bay Islands. As a result, these figures probably indicate an increase in employment in the tourism industry and not necessarily any decrease in employment in fishing.

Tourism

The Bay Islands provide a significant supply of tourism services to the international tourism market. Almost all visitors arrive via airplane. In 1991, 79 percent of the tourists were American, 8 percent Canadian, 7 percent from the Central American nations and Mexico, and 6 percent arrived from Europe (Haylock-Baileys, 1994). Eighty-five percent of the international arrivals are SCUBA divers. Thus, the vast majority of the export earnings coming to the Bay Islands through the sale of tourism services are attributable to the hotels and restaurants that attended diving service providers.

The vibrant global mobility of the tourist and seasonal labor workforce found in the islands make them ideal for international cooperation organizations for their "tourism" or "tourist" value chains including "Beach, Bait, Biscuits, Buses and other Caribbean Islands have become great for study in direct response from international cooperation organizations" (Quiroga de Rosales, 1992: p.8, translated from Spanish) as a sort of economic lesson pertaining to the protection of local natural resources.

Tourist visits have increased at a high rate in recent years. In 1983, 900 tourists visited the Bay Islands (Chandler, 1979). In 1978 the first international airport in Belize - Belmopan (1983 and 1984) were increased substantially (1,100 and 25,000 respectively) (Chandler/Institute of Tourism (planned, personal communication). Travel analysis estimate that between 41,000 and 71,000 visitors per year will travel to the Bay Islands by the year 2000 (Bay Islands Institute et al., 1994).

The development of tourism infrastructure has been swift and recent. Between 1975 and 1991 the total number of hotels in the Bay Islands more than doubled. In the next five years it increased about another third. In between two-year period the number of hotels on Uchuirehul (Table 2.1), in 1985, consisted of 11 hotels and have since approximately 20 hotels and more under construction (Barry McNeil, personal communication).

Table 2.1 Hotels in the Bay Islands

	Total	Belize	Chama	Uchu
1979	14	10	4	0
1982	16	20	6	0
1984	40	30	8	2

Source: *Chandler, 1979, *Page et al. 1993, *1991 Hotel Listings

There were 500 beds for rent on the three principal islands in 1993 (Page et al., 1993). The Institute of Tourism in Belize (ITB) had 1,240 total beds registered in the islands (885 on Belize, 114 on Chama, and 131 on Uchu) in October 1993 (April/October 1993). Accommodation range from 1000 to 1000 150 per night per person. Accommodation differ by as much as 700 percent for Belizean and non-Belizean. Several small (4-12 rooms) budget hotels are not included in the regular, the statistical survey of tourism industry including lodgings. But the total number of beds in the islands was about 1,200 in late 1993.

Overall, occupancy rates are approximately 85 percent, seasonally (Bartels-Bussiere, 1994). Several of the more expensive resort destinations report annual occupancy as high as 85-90 percent of capacity. These resorts are taking advantage of conventions and meetings in the low season (fall and at reduced rates). In general, seasonality is lower in the market due to the easy access to nature. High season is from December to April and low season is from May to October.

As of late 1995 there were about 30 drive shops located in the three islands. Most of these were small one to two level operations. Operators associated with the larger resorts call a high number of persons down per year. One resort located within the Sandy Bay/White Bay/White Bay Marine Reserves has one drive station on staff operating 5 vehicles. It sees about 3-4,000 visitors per year at an average of 10 drives per person or 10-40,000 person-drives per year. About half of the visitors are considered experienced (and/or are visitors from drive resorts, personal experience).

The demand for the company on all islands coming about US\$ 300 per month in wages. This sum is less the equivalent of their wages in age.³ On the whole, there are relatively few day islands drive stations and subsidiaries. The problem is exacerbated by legal and illegal European, Time, pleasure level and experience the most common reasons cited for the lack of supply of local visitors. The most direct connection to the financial growth drive tourism is, therefore, not benefiting average visitors.

An study on two-thirds of the foreign visitors to the islands indicate that they prefer these holidays (Ngant et al., 1992). A preponderance of preferences for "all inclusive" has significant implications for the structure and dynamics of the local tourism market. Expressed in other Caribbean travel destinations (e.g. Jamaica) demonstrates the limited positive local financial multiplier and community development effects of tourism development.

³The average annual income in the Small Islands economy in 1990 was the lowest found in the Western Hemisphere at US\$ 180 (World Bank, 1992).

Legal Institutional Framework

Aspects of the legal institutional context may influence the extent that NGOs choose to address and be able to be effective with a few choices. Laws regarding land use, development standards, foreign ownership, protected areas, marine and terrestrial resources are of particular importance to IRLA's role and performance. Of course, the mere presence of these regulations is not sufficient. The consistency and legitimacy of enforcement are as important to the performance of a legal institutional framework as the laws themselves.

The Department of the Bay Islands is divided into four municipalities: Glade and its adjacent bays, Orange and its adjacent bays, Lively the western half of the Island of Lively and Lively the western half of the Island of Lively (Page et al., 1993). Each municipality has an elected mayor or "Maire." The department has a governor and a minister (physically) who represent the Bay Islands at the national congress or Tegucigalpa (Jelsa and Diana Gilmore, personal communication).

Federal income taxes are assessed on a 10-percentage basis. Locally derived non-profit NGOs are exempt from income tax. Property taxes are administered at the municipal level. It appears that taxes are probably a majority of those who own.

Essentially, all natural resource issues must pass first and through the Federal Secretariat del Ambiente (SEMA). All natural resource issues are referred to the Institute Hondureño de Turismo (IT). The IT is not a sub-unit of SEMA. The Bay Islands were declared a tourism zone by the State Ministry of Culture and Tourism (MCTUR) and were added to such by the Supreme Economic Planning Board (CONEPAL) in 1981 (Federal Source #187) (Page et al., 1993). When conflicting or complementary international natural resource interests are concerned a strict clear which federal agency has either jurisdiction or responsibility.

National level projects, programs, themes and official activities passed to the municipal government. If the municipal government has no resources, materials are provided to it. The

municipal and smaller with national level governmental agencies located in each municipality or department. On the municipal and departmental level national concerns cannot be applied by Comisión Ejecutiva por el Desarrollo Regional (CODEFOR), COMOPDR, but the power to transfer management responsibility for individual parks and reserves to PROs and other entities (Najera et al., 1995). Currently, there were CODEFOR representatives at the Bay Islands (see Anderson, personal communication).

However, in 1981 another governmental unit was formed (Agreement 1111) in the Bay Islands, La Comisión para el Desarrollo del Departamento de los Islas de la Bahía (the Commission). The Commission was created to deal with the particularly fragile nature of the natural resources here and the intense interdependencies between economic development and environmental health in the Bay Islands. There were no such commissions located in any other departments.

Government agencies must constantly require grants and other forms of financing from national governmental and nongovernmental sources. As a result, the nongovernmental Bay Islands Foundation for Environmental Regulation and Integrated Development was established to require funding on behalf of the Commission. The magnitude and dependencies of Foundation funding are available.

It is not the municipality concern to the Commission, which answers to SEMA, if the Commission and the municipality concern that a program is locally beneficial and desirable, they may ask a local NGO for an opinion. In the Bay Islands EICA is asked about the potential environmental impact of a project. APRODR is contacted about rural development issues (John Zedler, personal communication). EICA's opinion is requested only if the project is large enough to legally require an environmental impact statement (EIS). If EICA sees no great environmental consequences or deviations from the law by the proposed project, the Commission and the municipality may ask for no review of the project. No formal EISs have been prepared by EICA. Further, EICA has only a

managing and conserving soils. It has no direct power to dismember, if the government decides not to use (John Dwyer and Cheryl Calabro, personal communication).

The Honduran government retains its dominant position in not adequately providing for the management of its own parks and protected areas. The government recognizes that local NGOs are important for funding that the government cannot attract. So, the government encourages and empowers local and regional NGOs to manage these areas in its stead. The NGOs act as a proxy for the government by adopting public lands management responsibility in the place of a governmental agency and reports directly to the government. The identified NGO does not come under any competitive pressure from other NGOs or governmental bodies that the government deems improving NGOs a responsibility for the national system.

There are significant conflicts over land use and land use on the islands. Many individuals or organizations claim ownership of the same piece of land. One of the important rules systems say, all or some of the stakeholders may be telling the truth. Proof of land title is difficult to establish within the national system. Disputes are handled in the municipality. It is not certain that the process is successful these cases.

In Honduras there are no land laws. In order to control the proximity of land facilities, the Honduran legal system is designed to all landhold everywhere in the country (John Calabro, personal communication). An example of an identified attempt to regulate personal land regulations in the Bay Islands are as follows: "The use of deep water will be prohibited except for Adam Initiative's projects." The inability of municipalities to create their own regulations causes difficulties for places which have distinct legal codes from the rest of the country. Three levels of the land use and departmental autonomy influence the management and use of natural resources in the Bay Islands, *Los Molinos* (Autonomous (the law of the environment), *Los Farallones* (the tourism law), *Los Encuentros* (Historical (the natural resources law) and *Roatan* (Municipal law (local ordinance number four).

Assessment Dec. passed in February of 1991, is of particular interest regarding development and natural resources. The provisions of the ordinance include the following:

- a requirement of an environmental impact study and socioeconomic feasibility study of any proposed development within the boundaries of the Bay Islands;
- a protected/land and water use program including the type, character, location and height of any new structures, the density of human occupancy and the preservation/creation of wetlands and vegetation including mangroves;
- the protection of the structure no movement from the capture and removal of particular marine species; and
- the preservation of marine habitats and regulation of fishing practices on and around the coast (Jennings, 1999).

For example, spear gun-fishing, the collection of black coral and fish for the pet trade are prohibited. Development of properties over the water and water-based vessels depend on this prohibited under *Assessment Dec.* The legal responsibility for enforcement of the regulations with respect to boats is placed on the first master or guide. The main enforcement is in the municipal jurisdiction for the rest of the agreement (Jennings, 1999). Local efforts of United governmental organizations, local NGOs and citizens act as monitors of the municipalities. Both monitoring and enforcement efforts have not made limited success. Yaguel et al. (2013) report success in *Change Decision* commitment of the past mayor of Orange to environmental issues.

Even in 1990s, foreigners could not land unless allowed the coast. This law effectively kept foreign investment out of the Bay Islands. The restriction was changed in 1991 as an effort to encourage foreign investment and provide a source of local currency. As of 1991, no foreigner is allowed more than 1000 square meters of land. A company (e.g., a real estate agency) owned by a foreigner with Honduran residency has subleases rights in land ownership.

This law has had several observable effects. The amount of speculative investment in land and development by foreigners in the Bay Islands has sharply declined in the past few years (see Figure available). Recently, new developments that are attempting to comply with the regulations are subdividing their holdings into plots of precisely 75 or 73 m (2009 m²). They are much more dense

about the traditional land tenure arrangements. Further, these issues have been placed regardless of the ability of the land to support the diversity of individual development.

The threat to reality of violence as a very real part of life in the Bay Islands and Honduras. For example, in 1996 the head of a local-based Honduran NGO was murdered over land disputes. Like BICA, the PROMAGENTE group, formerly headed by Juanito Kasso, is supported by the Honduran government to manage the 740 sq km Punta Gorda National Park in the north coast of Honduras. The murder of Juanito Kasso did not receive the attention of the western media like the Assassin's Creed Murders, but the situation is very much the same. BICA leaders in Belize and Guatemala report as terrible to date. Leaders in Belize have suffered kidnappings, mutilated parts and even deaths of violence. At least one leader in Belize taking precautions against the possibility of getting represented or targeted.

The political, legal, economic, governmental and cultural characteristics of the people of the Bay Islands in addition to the physical and natural resource environment provide the real and real opportunity for people to prosper. One of the ways that some of the people of the Bay Islands have chosen to organize it is the form of the Bay Islands Conservation Association. The next section reviews the history and behavior of BICA given the institutional and natural environment just described.

The Bay Islands Conservation Association

This section lays the groundwork for addressing the second research question: Given the institutional and natural and natural resource environment, how has BICA formed, adapted, and performed? BICA defines its mission, discusses its programs, its structure and behavior in response to the desires and desires of its decision-making members and the needs and opportunities provided by the Bay Islands. This section reviews BICA, a physical presence and its mission and allocation of

Endeavouring in activities. Endeavour does serve as a centre of the programs that BICA undertakes in order to make progress toward realizing the goals of its mission as defined by its constitution.

BICA's Structure and Financial System

BICA opened its Kanton office in 1970 with equipment from the Institute Biologique du Togo (IBT) and USAID and support from local individuals and institutions. The Association obtained legal status (*Personne Juridique*) from the government of Benin as a non-profit, non-governmental organization via government resolution M 11 (Kanton, 1990). BICA consists of three chapters. Each chapter has a group of student associations. A main administrative subgroup is in Dapaou as each of Benin's principal Big Islands. In addition, the Sandy Bay Marine Reserve operates under the direct supervision of BICA Kanton. The Reserve is an artificial MCD established in 1983 to protect the coral around Sandy Bay. It maintains a separate budget and board of directors, hires its own staff and makes its own policy.

In 1970 there were approximately sixty-eight BICA members located in the islands, the mainland and abroad. By late 1979 the mailing list amounted to Kanton had grown to more than 100 individuals and organizations. Members receive an annual newsletter detailing BICA activities and requesting member join a membership. BICA Kanton has its own newsletter.

BICA Kanton office is in the center of the main settlement of Cotonou, Benin. BICA Kanton is run by a seven-member board of directors. The Board is, ostensibly, elected by the general membership via an annual ballot. Only one member of the board has changed since 1979. However the current executive director has advised her desire to step down as chairman is anticipated.

The Kanton office employs two paid secretarial staff and a French Crops Volunteer (PCV). One of the staff has completed secretarial training. The secretarial staff is paid through contributions by local businesses. Also as secretary, BICA has had voluntary secretaries from the French Corps who is an employee of the US government. Neither the director nor the sub-director of BICA's Kanton

are functionally compensated for their significant vision loss. All personnel have computer word processing skills and several have data base management skills. All IBCA personnel are functionally bilingual. As other members are utilized as staff in IBCA's day-to-day efforts, these three individuals make the Boston office work.

The Boston office has a photocopier machine and is equipped with two computers, located by Frank Webster, and two desktop printers. The office has a copy machine, available to the public and donated by the Quaker Union for the Conservation of Nature (QUON). The copy machine serves the dual purpose of providing additional income to the Association and expediting work to IBCA members and paragonists. The office is also equipped with 20 inch color televisions, a VCR, clock and overhead projector and all other essential office equipment.

The office maintains a small resource consultancy primarily covering environmental education, soil ecology, restoration, and animal management and development. Most of the literature was donated by various organizations as reflected in existing crates. In addition, a number of United Nations Development Programme (UNDP), Food and Agriculture Organization (FAO/UN) and Honduran government reports can be found. Materials are about 60 percent in Spanish and 40 percent in English.

Brochures are on display and available free to the public. IBCA's efforts are designed by an ex-FCV and founding member of IBCA. The office walls are papered with conservation posters, appropriate clippings, printed materials and photographs of successful conservation efforts and issues. Local students and tourists are often found perusing the literature or viewing the walls out of merely good or interest.

IBCA's other two branches are located on the streets of Quesada and Toluca. IBCA-Quesada was formed by the Quesada-Landis Club (QCLC). Notably, the QCLC lost much state of Honduras' forest protection system. IBCA-Quesada now consists of registrants involved in the forest

industry, ILO members, and several other prominent regions. Companies have been invited to BICA. They usually donated or made an office and a dinner program to Chicago.

BICA-Ohio maintains an office in the Chicago precinct in Irving street. It has recently elected a new board of directors, and assigned its executive and executive committee. The Ohio branch has a past director/president and an executive staff. The past director was elected and suffered financially due to the demands of the previous, precipitating the change (Shelly McNich, personal communication).

Until 1991, BICA-Ohio was able to depend heavily upon the efforts of a PCV who was not more than 100. BICA chapters will not have the luxury of paid, full-time, PCVs after 1991. The House Corps will not get as much volunteers as BICA due to changing priorities at Peace Corps-Bushland (Jim Anderson and Joe Anderson, personal communication).

The director of BICA-Ohio argued (about 1991) that out of income from a donation BICA-Ohio does not seek financial support from local businesses for administrative or operating expenses (Shelly McNich, personal communication). One of two subordinated computer down to BICA is awarded for the Ohio branch. The director intends to seek for activities in the center center.

BICA-Ohio's center was donated just over 100 sq. ft. structure is close to the restaurant where the BIC representatives is located. The restaurant owner's home is above the restaurant. He is a BICA Ohio's secretary and Ohio is voluntary BIC representative. The center center is having and open as many as 11 hours per day. It is equipped with a TV and PCB. The center center looks as a half-dollar language, BICA is doing, and features from every grade in the Bushland system. One or two staff only for all these branches are not paid most of the time. Over 4,000 people visited the center in 1994 (BICA Ohio, 1994).

BICA's Finance

Assessing the important activities of all NGOs involved raising and the appropriate use of collected funds. BICA needs financial support from local people and institutions, national people, the national government, and international organizations including NGOs and financial institutions.

BICA's internal sources of funding include memberships, donations to specific projects and sales. BICA's external sources of funding or expenses include the USAID, Fundación Vida (national level Honduras NGO), APHRODES, CONDEPOM, the Forest Corps, the United Nations, TACA Airlines, the Caribbean Conservation Corporation (international NGOs), the National US Marine Sanctuary Program, the Canadian Agency for International Development (CAID international/ORGANOS), the ECHO, the UNICEF, UNICEF, the government of Switzerland and the UN.

Over the years membership dues have become proportionally less important to BICA's overall annual budget (Table 1.1). The international membership categories and associated donations are minor (50 members/US\$450, student/young (50) important, enterprise sponsor (1000) important, and contributing from members/US\$100).

Sales of t-shirts, books and photo-spots (US\$ 115,000) have a small but consistent impact on financial welfare. Five different books (US\$ 11 in Belize, US\$ 10 in Cuba) are on display and for sale. T-shirts are sold to local people and members at a discount (US\$ 7). An important source of income in 1990 and 1994 was derived from book sales, primarily *The Bay Islands: History and Ecology* (US\$ 60,000), 1991. These sales are potentially more important for relations, public relations, and advertising than their financial contributions explain. Financial documents and contracts are the most substantial proportion of the annual budget (Table 1.1). Technical assistance and volunteer labor are essential, necessary and are rarely included in BICA's budgets. As a result, uncertainty is created in the actual total costs of engineering such projects.

Overall BECA's inflows from FY0 represent a 144 percent increase in nominal terms over 1991 inflows for FY0 represent a 149 percent increase over FY0. In nominal terms, FY4 inflows represented a 192 percent increase over FY0 inflows (Table 2.2).

Table 2.2 BECA's Financial Inflows

Category	1991		1992		1993		1994	
	Gross (1990 Inpesos)	%	Gross (1990 Inpesos)	%	Gross (1990 Inpesos)	%	Gross (1990 Inpesos)	%
Total	48,718	100	170,804	100	231,008	100	489,214	100
Subsidies	11,200	18	21,087	7	10,243	4	1,423	3
Total Donations & Grants	31,000	79	14,344	33	179,213	87	397,810	81
Donated to Mexican Revenue	--	--	93,803	54	81,390	35	187,600	38
Donated to Solid Waste Program	--	--	--	--	19,800	8	44,500	9
Donated to Post-Royal Refuge	--	--	--	--	--	--	174,687	36
Bank Sales	--	--	--	--	49,764	21	30,000	7
Tuition Sales	--	--	6,237	4	20,048	10	20,867	4
Parsons Share	--	--	10,220	20	--	--	--	--

Note: Specific donations are subsequent official donations. Percentages reflect proportions of total inflows in each year. "--" indicates lack of information and should not be construed as equivalent to "0."

BECA's ability to fund its operations is a matter of projects and programs. Donations and contracts are increasingly contracted for specific projects, while subsidization rates increase can be used as BECA's subsidies. Table 2.3 illustrates BECA's primary expenditures from 1991-1994.

Expenditures in 1990 represent a 155 percent increase over 1981 levels in nominal terms. Expenditures were 119 percent higher in 1990 than in 1989. BCRA was highly liquid at the end of 1990, holding \$41,641 in cash (30 percent of total assets) or bank deposits in cash. This was due, in part, to difficulty in implementing the demonstration project resulting from conflicting claims to the granted sum. Expenditures were 118 percent higher in 1990 than the previous year. Office and administration costs account a relatively constant proportion of the total budget over time (Table 3.2). However, office and administration costs are not assigned to the project or program.

Table 3.2: BCRA's Financial Outflows

Category	1981		1989		1990*		1990	
	Gross (1981 lempires)	%	Gross (1989 lempires)	%	Gross (1990 lempires)	%	Gross (1990 lempires)	%
Total	28,644	100	34,643	100	541,708 ^a	100	232,733	100
Office/Admin	11,467	33	28,238	34	24,895	4.6	41,233	20
Solid Waste Program	4,500	8	12,470	4	265,806 ^a	50.4	11,608	5
Water Sector	40,677	67	45,272	46	79,130	15.4	205,502	94
Environmental Education Project	—	—	21,794	13	49,230	9.1	1,469	<1
Beer Project	—	—	—	—	13,888	3%	—	—
Radio Project	—	—	1,240	1	12,124	2%	—	—
Cover Spans Project	—	—	—	—	1,361	<1%	40,407 ^a	17

Note: * 1990 total expenditures include 166,874 for a sewer/garbage truck. This figure is not allocated to funds. Thus, two accounts are shown for 1990, original without truck. Percentages reflect proportion of total expenditures in each year. "—" indicates lack of information and should not be construed as equivalent to "0."

The Marine Reserve garners a high proportion of total expenditures. Expenditures within the expansion of the Reserve include the West End and West Bay areas of Northwest Reunion during the period. Expenditures on environmental education and coastal wildlife management programs have been significant at times but sparse. Finally, BCCA has expended progressively lower (or no) variable financial resources on the solid waste program over time (Table 1-3). This action demonstrates BCCA's opinion that the municipality is responsible for garbage collection and disposal. This program and the Marine Reserve have received substantial in-kind support.

Table 2-4 compares values for the US dollar year-dollar the expansion of annual budget increases as demonstrated by changes in BCCA's purchasing power of US dollars from 1991 to 1994. (Table 2-4). BCCA's actual budget has increased in nominal terms. The budget is, generally, increasing in real terms, as well. Evidence of US dollars supports the relative buying power performance of the budget.

Table 2-4 BCCA Budgets in US\$

	1991	1992	1993	1994
Revised US\$	10,107	16,344	21,133	27,555
Inflation Rate (Consumer US\$)	+ 8.7%	+ 28.7%	+ 17.1%	+ 11.1%
Consumer US\$	9,441	12,441	17,941	24,750
Real US\$ (1993)	21,109	13,276	84,581	67,260
Percent Change Purchasing Power Over Previous Year	-	+ 145	- 18	+ 48

Note: Adjusted to inflation as dollar independent of relationship with imports. Source: World Tables, 1991. Bay Area Research, 1994 (personal communication).

BCCA-Table 2 summarizes are included in the Budget/Budget statements. BCCA-Change/has and its reported budget. BCCA-Table's most recent available budget derives from 1992-93. In the year total collect increased to TL, 551 imports and expenditures were TL 411 imports. Income was

derived from selling deer's antlers (\$8,744 income, or 33 percent), donations (\$3.8 percent) and retail sales (.1 percent). Expenditures were derived among other categories (.1, 1.03 income, or .1 percent) a housing loan project (34 percent), a solid waste management project (73 percent), deer insurance (.28 percent), environmental education (3 percent), roof project (2 percent), and toilets (2 percent).

The new autonomous entity Bay-West End Wildlife Reserve (formerly Bay West Marine Reserve) is run by a twelve member board of directors. Most are regular members of BCCA. The Reserve director is an employee of BCCA and the Marine Reserve. The members of this board are associated with businesses dependent upon the health of the coral reefs within the Reserve.

The Reserve has eight school programs and one volunteer, a director, six guards, a bookkeeper and secretary and a cleaning person. In 1994, the Government donated a small boat, motor and two very water communication equipment to the Reserve. The BWT donated two 30 foot long boats. Anthony's Bay Reserve, the largest reserve within the Reserve, donated two rubberized rafts to self-propelling.

The Reserve runs on a variable budget of approximately 21,000 lempiras (\$US 2,300) per month less than voluntary contributions from local businesses. With some month to month variation, 3 other clubs, 12 hotels, 4 restaurants, and 7 other businesses contribute from 50 lempiras to 10,000 lempiras monthly. The median contribution is approximately 100 lempiras per month (John Cruz, personal communication). In 1993, one donor contributed 50 percent (\$4,000/8,000) of the Reserve's operating funds. Contributions are now more evenly distributed.

All funds contributed to the Reserve, all salaries and other expenditures accounting from the Reserve are disbursed through the BCCA, a tourist office. This provides the Reserve a claim to legitimacy. Although the Reserve profits BCCA by several years, it did not the for almost 500 years until recently. Until it was run as a Government institution, the Reserve functioned under BCCA and

within the responsibilities that BCCA is responsible for carrying out. Legal status is required to help manage the land's resources, manage the Reserve, and help growth in tourism and businesses and natural areas. BCCA helps the Reserve to attract external sources of support.

BCCA's Programs and Responsibilities

A mission statement by the boards of jointed BCCA outlines a focus on BCCA's mission statement. The Association's mission is:

- To protect and manage the fragile ecosystems of the Bay Islands;
- To promote sustainable economic development through the use and management of the Islands' natural resources;
- To promote environmental awareness throughout the Bay Islands through individual and community involvement;
- To conserve and enhance the Islands' representative habitats and rare and endangered species. (BCCA 1994, p. 3)

BCCA implements a variety of programs and supports a number of activities in order to make progress toward these broad goals. Other than land leasing activities previously discussed, BCCA's programs and activities fall primarily into six categories: (1) environmental education, (2) training and skill development, (3) solid waste management, (4) monitoring potential areas, (5) monitoring compliance with environmental regulations, and (6) wildlife management programs.

Environmental education

BCCA's newsletter "Island Watch," is now in its third year. "Island Watch" and "Island Currents," from the U.S. map, contain environmental education information and provide detailed descriptions of ongoing BCCA activities in numbers. In addition, they provide information to potential members who take the report as display in BCCA offices. BCCA has posted signs reporting appropriate fishing stipends. Many Grand Bay and Silver Key businesses display "We Support the Marine Reserve" signs. Like most about BCCA activities, the unique ecological features of the Bay Islands, and conservation issues for general to quite visitors. BCCA's data can be purchased as a

number of locations on the island. It is relatively common to see tourists and local business people leaving their 4-wheel vehicles and only provide an occasional source of income to BCCA, but also act as form of protection both at home and abroad. The newsletter, informational signage, interpretive center, and available literature available to BCCA's environmental education, cultural and natural land racing and preservation efforts.

Among the first programs implemented by BCCA-Udo were the Turtle Head/Star Program. The program involved capturing, banding and release of Loggerhead and Hawksbill sea turtles. Environmental education programs were simultaneously implemented as the scientific and regulatory process was put on Delmas and to set turtle release sites in their community. In all cases, the turtles were released from their original nesting sites between June of 1991 and August of 1993 (BCCA-Udo, 1993). A video describing the work was produced and can be found at the BCCA-Udo office.

The enhanced environmental awareness benefits of the program may outweigh its initial biological conservation benefits. The BCCA-Udo could not have done better than a local public relations perspective (Shelly Mollie, personal communication). As of the summer of 1993 the capture of nearly a dozen large tagged sea turtles from this program had been reported to BCCA-Udo. They were confirmed by showing numbers to BCCA-Udo by the Senior Curator for Sea Turtle Conservation at the University of Florida (BCCA-Udo, 1993). The scientists under whose their tagged turtles were identified and clear. It is possible that they were inadvertently captured and later released or that they were killed and eaten.

BCCA-Boston also had a student ecology research program. In cooperation with BCC, BCCA is raising sea turtles in captivity and releasing them into the wild. The Boston program has both a biological and an educational component. In addition, BCCA has an ongoing survey effort. It asks people to report the locations of nesting beaches and turtle sightings.

At the beginning of October 1993, BECA was informed that they had been granted over US\$ 50,000 to implement a JICA environmental education program. This is BECA's most widely funded program to date. The effort results with students and teachers in developing environmental knowledge, awareness and a sense of pride in fisheries as stewards of their natural resources.

Training and skill development:

In 1994 and 1995, BECA/JICA hosted several geographic information systems (GIS) training workshops for local officials. These workshops were to facilitate the dissemination of current land use/land capability and the applications of alternative future uses. They were coordinated by BECA, conducted by the United Nations Institute for Training and Research (UNITAR) and supported by JICA, the Commission, and several local entities (BECA, 1995).

BECA personnel attended a variety of other training and informational events. They include the second World Congress on Tourism for the Environment, a protected area management workshop and a marine protected area management workshop. In addition, BECA personnel attended meetings with other NGOs and strategic planning and grant writing sessions in the mainland and in other countries including the United States. These activities were sponsored by a variety of agencies including the Forest Corps, the U.S. National Marine Sanctuary Program, and TACA entities (BECA, 1995). These activities enhance the skill level and experience of BECA personnel, facilitate the exchange of information and the development of linkages with other NGOs and with potential sources of funding and expertise.

In addition, Marine Reserve personnel have expanded their range of activities to include environmental education and job training. With funding from INOP and the ECLN, the Reserve is involved in training local young people how to dive and become certified free divers. Others are developing the skills to be water and fisheries in the tourism industry. The residents are also involved with environmental activities throughout their training, developing support for the Reserve

from the grant money. As of Jan. 1995, 22 young people had been trained between the two programs. Many are currently employed at their professions (John Cruz, Alejandro and Tina Montemayor, personal communications).

Waste management

BICA's solid waste management program is, perhaps, its most widely recognized activity in Mexico. In cooperation with the Municipality of Mexico, BICA services the larger communities with garbage pick up on a weekly basis. BICA agrees to provide the truck and pay for driver. The municipality pays the maintenance and fuel costs (BICA, 1995). Currently, the truck is out of service. The municipality and BICA are now attempting to make a responsible for its repair (Charles Ogden, Jorge Cal Hwa and Cheryl Calende, personal communications). BICA is also doing similar programs, particularly in Coahuila, where the garbage problem may be the worst.

BICA has held several house and community clean-up days with cooperation of the local schools. Clean up programs are accompanied by information about the common communicable diseases, including Malaria and Dengue Fever. This program requires grant money support for BICA and provides educational benefits as these involved in clean-up efforts.

Prior to the implementation of this program, all solid waste was either burned by private individuals or thrown in the sea. Traditional practices were less problematic when everything in the islands was organic and when there were greater land areas. Improvements to development require waste and has been human misbehaviors. Now, communities are required and packaged in plastic. Such packaging poses a health hazard to sea creatures and does not degrade, causing much greater problems than in the past.

Marine resource management, monitoring, and environmental education

BICA's natural resource management efforts also include educational, monitoring and enforcement components. Clearly speaking, natural resource management programs include education

in order to change behaviors and enhance awareness. They include monitoring and enforcement as well as ensuring that behaviors do in fact change and management objectives are met.

For example, in 1994, BCCA organized and hosted a Green Spaces Management Workshop with the help of the IMA, APHIS/OWS and Fisheries Feds. The participatory workshop was held in an information exchange with local hunters and other concerned individuals (BCCA, 1999). BCCA is working toward the development of a Green Spaces Inventory and management program. The objectives of the proposed four-year program are to: repopulate the locally important species, improve or habitat, and to foster and improve the establishment of breeding facilities and species genetic diversity (BCCA, undated). The program works toward BCCA's environmental education objectives by providing participants information about hunting practices, species ecology, and breeding methods. It also advances BCCA's environmental management objectives by educating hunters or managers of species into sustainable harvestable resources.

In late 1996, BCCA received USF Habitat from CAWD's survey, from and contract informational report around the Fort Royal Park and Wildlife Refuge. This effort was to protect an important watershed around Audubon from further destruction and illegal encroachment. In addition it was to protect the species living within the Refuge and allow for the protection for future possible investigations and re-introduction to the Refuge. The project, with the cooperation of COWDPOB, the governor of the Bay Islands and the municipality of Santa Cruz de la Sierra, was scheduled to be completed by September of 1998 (BCCA, 1999). However, it is not yet completed due to a land title dispute within the boundaries of the Refuge.

The Sandy Bay/Water End Marine Reserve (The Reserve) is engaged in gathering the Marine Reserve. The capacity of contributions to the Reserve monitoring and enforcement is the only role the Reserve authority should serve. BCCA has been requested to manage the protected areas of the Bay Islands. However, it does not have any authority to enforce the laws. It has the authority to hire

guards from the pool of military personnel and they are empowered to enforce the laws. The effectiveness of the hotel guards directly reflects on the perceived effectiveness of BONG's reef protection program.

Nearly three percent of Reserve funds go to the reef protection program. The program includes patrolling the Reserve at night to keep people from diving, burning corals, barbed wire and the sea grass, cutting mangroves and collecting coral, lobster, and seaweed. The Reserve monitors diving practices and/or forbids, regulates fishing practices, restricts alcohol use around the Reserve and anchoring of dive and fishing boats. Boat and motor maintenance, fuel and lubricants are included in the 11 percent. The other 7 percent of the budget is for education, bookkeeping and diving (John-Cox, personal communication).

The Reserve, in cooperation with the U.S. National Marine Sanctuary Program and Reef Relief (US-based NGO), coordinates private efforts to implement a diving and fishing ban program. Boat anchors are a significant source of reef damage. Fishers and divers kill portions of the reef each time an anchor is dropped. In that program, thirty-two of the most popular dive sites were targeted for the permanent installation of a permanent sea buoy. Additional benefits of mooring buoys are that they can provide underwater reference points for divers and researchers, directly the reef for tourists, act as fish attracting devices (FADs) and symbolize and raise awareness of ocean conservation construction efforts (BSCA, undated).

Local dive shops and hotels were asked to participate in what is, in essence, an "Adopt a Dive Site" program by purchasing, installing, and maintaining one or more of the buoyed dive sites. The total fixed cost of a buoy is from US\$ 80 to US\$ 130 depending on the quality and durability of the construction. As of November 1995, 26 of the 32 buoys had been installed, most of them by one dive resort (John-Cox, personal communication).

BCA-Urbis is also organizing a volunteer-based meeting (work project). As of October 1985, 34 of the 55 proposed groups had been selected. The Southwestern Institute, reportedly purchased the land designed by a BCA-Urbis member for their project in Chaparral in the Big Bend (Shelly McNeil, personal communication). However, BCA-Urbis decided to move its headquarters to Urbis's meeting project, preferring to turn full responsibility over to the five groups. As a result, a new modified NGO has been formed by BCA-Urbis members to build, recruit, and maintain volunteer groups around Urbis.

Finally, BCA is engaged in a cooperative effort of conservation-related NGOs from the Southwest of several States including MICOLANDIA, PULACURA, PUMAHUE and PULCA (in English, Foundation for the Protection of Condalia, Puma Cat and Tiger, Capy and Caiman National Park and Lake Chumbeiro Foundation, Capy and Snake Foundation, and Puma Tiger National Park Foundation, respectively). The USAID-funded (American Environmental Protection Fund Project (AEFP)) was still in its proposal stage at the end of 1985. It will involve the Caribbean Conservation Corporation (CCC), Wildlife Conservation International (WCI), Tropical Research and Development (TRAD), LIXAL and Fundación Yelken developing a regional management plan and regular meetings of administrators among groups with common interests and needs (see Shelly, personal communication). The proposed project includes conservation education, evaluation, guide training, protected area management, and community development activities.

CHAPTER 1 CONCEPTUAL AND ANALYTICAL APPROACH TO UNDERSTANDING BICA

Synopsis

A practical overview of how BICA has made use of its extensive national resources management in the Bay Islands has been established. The understanding of BICA provides the knowledge base necessary to analyse the business of the Association and the Bay Islands which influence BICA. Chapter 1 describes a framework from which the component parts of BICA can be conceptualised and analysed. From this framework a greater understanding of the primary correlates with BICA's performance can be revealed. In addition, BICA is placed within the family of local NGOs. The integration of local NGOs enhances the specific understanding of BICA and provides a point of reference for any general results derived from this case study.

BICA Conceptualised as a Resource Organisation

BICA chooses what resources it will undertake given its objectives, the perceived needs of the Bay Islands and the nature of its membership. BICA allocates its scarce time, resources and management activities to objectives. The structure and behaviour of BICA has been evolved to manage the Association's limited resources effectively in its ability to achieve its objectives. Many of these features are under the direct control of BICA. An analytical framework is needed to develop the understanding of the behavioural, management and structural features of

BICA which reflects or impacts its ability to perform. A framework appropriate for analyzing BICA should also be useful for understanding similar organizations.

"Organizations are either formal or informal structures with recognized and accepted roles" (Delmonick, 1993, p. 5). Some organizations are created to be oriented primarily toward the pursuit of profits derived from the provision of goods and services. However, organizations vary greatly based on their scale of operations, types of goods and services provided, structure, characteristics, and relationships with relevant institutions. Organizations primarily oriented toward profits are further categorized as, for example, multi-national corporations, public corporations, family businesses, or partnerships. These organizations are commonly recognized as producing economic value or economic organizations. Economic organizations are commonly analyzed as economic firms.

Other organizations manage economic firms in order to meet multiple objectives. Organizational members may or may not include profit-seeking. These organizations may provide their services primarily to the benefit of their members or may have broader moral objectives. BICA is a multiple objective organization which values financial capital as a means to achieve nonprofit ends. The measure of success for organizations like BICA is multidimensional and is expressed and judged by their members and donors.

"Although usually confined to the profit-seeking enterprise, the terms 'firm' and the economic meaning that encompasses it is in fact also applicable to hospitals, churches, (and) cooperatives" (McChesley, 1998, p. 122). "Firm" is, essentially, economic shorthand for a continuously operating structure for the provision of goods and services. A market "...between people to specialize and cooperate continuously. A firm also induces/facilitates specialization and cooperation but continuously" (McChesley, 1998, p. 127). Nonprofit/nonfinancial and non-for-profit organizations are conscious attempts of individuals to cooperate for the provision of goods and

members. As a result, the economic theory of the firm is theoretically justified and practically useful in analyzing non-governmental and nonprofit organizations like NCA as well as profit-seeking organizations.

The economic theory analyzed as a production unit is used to decompose the component parts of the organization. A view of NCA in terms of its production components facilitates the understanding of other factors may influence its performance. Economic theory harness available physical and human inputs, technology and current and future resources prior information to produce outputs which are used to measure objectives of the organization. Organizations, as production units, have three potential flow for analysis: inputs, management or production processes, and outputs. The literature on local NCAs reveals a great variety of measures which might be described in terms of their components of an economic organization. Some of these measures will prove to be useful for describing and understanding NCA.

Input-Output Variables

Traditional flow inputs are human, financial, natural and physical capital. Weisbord (1988) derived a "collectivism index" based on his observation that there exists a causal relationship between the way an organization obtains resources and the nature of its outputs. The collectivism index measures the proportion of an organization's revenues derived from subscriptions, gifts, and grants from private contributors relative to sales of goods or membership dues. "Following the money" is predicted to be a significant determinant of programming choice effort and success by economic theory. Financial capital should, however, draw funds as an assessment of both profit and voluntary efforts and of both primary and indirect donations.

Human capital features of NCA might include an assessment of the level of education, training and skill of active members. Some relatively unobservable features of human capital such as entrepreneurial skill, leadership ability, problem solving ability, diplomacy, and social influence

are often considered as sustainable parts of the production processes or management. Gender composition, age, occupation, the degree of shared norms and interests within and external to the membership are additional variables to human capital factors considered (Kamete and Uphoff, 1994).

Physical capital traditionally includes all of the built-in and equipment, at the disposal of the firm. Office facilities, vehicles, tools, materials, and electronic equipment for the implementation of programs all potentially contribute to BCCA's effectiveness.

Natural capital reflects the natural environment available for BCCA's use. Natural capital reflects the range of outputs which are appropriate and possible for the organization and creates the natural setting within which BCCA operates. Natural capital is distinguished from physical capital in that natural capital is converted into physical capital by humans for specific uses over time. A rubber tree is natural capital. A rubber tree is physical capital.

Identified natural capital variables include topography, resource endowments, the productive capability of agricultural and nonagricultural lands, soil water supply (Kamete and Uphoff, 1994). Gertzel (1988-1992) evaluates the use of the shared resource base, the temporal and spatial variability of benefits derived from the shared resource base, the current condition of the resource base, and market conditions for products of resource extraction to understand the potential for the success of appropriate organizations (AOCs) in developing areas.

In general, natural capital is both an input and an indicator of performance for resource management oriented organizations. For BCCA, changes in the health of the resource and natural environment in the long term are indicators of the achievement of its objectives and the motivation for its existence.

Producer, Process, or Management/Control Variables

Ennen and Lipinski (1989) measure planning and goal setting variables including the ability to establish targets, control, physical and financial resources, the control of bureaucracy, conflict management strategies and the ability to make a legitimate claim to the control of resources. In addition, organizational structural variables including the size, structure, degree of formalization, centralization, structure and integration, incentives, decision making structure and normative relationships are considered production process-oriented variables. Further, organizational style including those of the membership, leadership, government staff, and outside agencies help to measure the primary producers of organizational performance. Finally, sources of difficulty including internal or external resistance, misadministration, internal rebellion, corruption and misperceptions, ignorance or indifference, and differential rates of participation within the membership are viewed as management or production process issues that impact performance.

Ennen (1990) measures planning, adaptability, decision-making framework, and accountability of decision makers to the membership and to its other constituents as proximal correlates with organizational productivity. **Carroll (1992)** evaluates aspects of technical innovation, contractual relations, vertical and horizontal linkages, community, governmental and membership participation in the organization, accountability of facilities managers to constituent organizations, and the age of the organization as production process

Output/Control Variables

Output have both quality and quantity features. Because organizations output are goods and services, **NGOs** output are programs. Because organizations can have multiple products among which some resources are allocated, the same **NGOs**, **BCAs** for multiple programs. Types of common cross-oriented **NGOs**, **BCA** programs include environmental education, lobbying activities, monitoring and protection activities, reform-oriented activities, legal education, wildlife management,

network, procurement and fund raising. Programs may be ongoing and continuous, periodic, or on a one-time basis.

Arora (1998) and Carroll (1992) assess output-oriented variables related to the evaluation of Inter-American Foundation (IAF) grantee programs. They use the cost-effectiveness, quantifiable health benefits, changes in income to profit, housing and employment, group cohesion, medical service delivery, sustainable decrease in poverty level, resource mobilization, and capacity growth as resource management and share making by beneficiaries of IAF programs. In appropriate organizations (IAFs) program output surrounds the provision of services or the expansion/generation of profit-to-share relationships (Jensen, 1990; Wade, 1994).

Voluntary organizations are often highly constrained by financial and personnel. As a result, the number and types of programs adopted must be carefully chosen to reflect the strengths and capacity of the organization. Therefore, two features of organization outputs are potentially important: the appropriateness of the programs chosen in terms of the abilities and priorities of the organization, and the needs of its constituencies and the quality of the programs once chosen.

However, unlike profit-making and nonprofit oriented organizations operated not-for-profit, as BICA manages benefit flows in the Bay Islands, Honduras, it also fits as incorporated demand for natural resource management activities. The Association's performance, role and evolution are influenced by features of the Bay Islands. The Bay Islands provide the motivation for BICA's formation and the problems that it might address. Features of the Bay Islands influence the effectiveness and the feasible range of BICA's activities. As a result, understanding BICA requires the analysis of features of the institutional context of the Bay Islands. While many features of the inputs, production processes and outputs are directly under control of BICA, many of the Bay Islands' institutional characteristics are outside of BICA's ability to influence in the short term.

Institutional Context-Oriented Variables

Wade (1984) claims that both the content and structure of corporately coordinated resource management arrangements are dependent upon their cultural, economic, and political institutional contexts and the natural resource environment. Institutional context-oriented variables outlined by Evans and Uhlir¹¹ (1984) include social and resource integration and heterogeneity, biology (within the organization and various levels of government and other organizations), to include, public infrastructure, facilities and services, technical patterns and land issues, resource level and distribution, resource diversification, and propensity to form groups as resource. Further, institutional features including political and governmental support, community norms, traditional gender roles, and the permeability of stakeholders to the shared resource have potentially influence organizational performance.

Coleman (1990) indicates the number of individuals with claims to resources, the content and type of conflict over resources use, the availability of information about the resource base and its use, and information about the resource potential of benefits derived from the resource base as broad institutional indicators of the potential for successful RCM. Further, the rules governing the costs and benefits of resource (legal or quasi-legal framework), any anticipated changes in the rules governing resource use, and the perceived legitimacy of current and anticipated rules governing use of the resource have contributed to an appraisal of the political, legal, economic, and culture-based institutional contexts.

LCRs, CMCs, IAs, and CFPs

To the extent that MCA and other MCOs bottom in a similar fashion in profit seeking organizations the multidual resource theory of the firm provides a useful analytical approach to increasing understanding. However, neither MCA nor all MCOs presently fit that model due to their

operative in shaping local social conditions and behaviour. Evans and Lipton (1984) divide local voluntary organisations into three categories: local development associations (LDAs), cooperatives, and interest associations (IAs). While the typical organisation are classified based upon the services for their members, the placement of decision-making authority within the organisation, organisational functions, the degree of membership within the membership and the manner in which the organisation collects financial resources (Table 3.1).

Table 3.1. Distinguishing Characteristics of Local Organisations

	Local Development Associations	Cooperatives	Interest Associations
Structure	Depends on local services for the area residents	Increases political standing benefits from economic production or consumption	Advocate members interests defend member specific activities for members
Authority	Quasi-independent, may have government endorsement	None, but may be registered and regulated	Only as far as based on what members decide to do
Functions	Multiple functions on various issues	Single or multiple	Single or multiple, depending on agreements of members
Membership Composition	Residence-based for education, health or loan purposes	Contribution of economic resources	Personal characteristics or activity
Resources	Assessments and contributions (often on loan)	Pooling of member resources or shares	From dues, member fee, not by members for group activity or interest, may get outside resources

Adapted from Evans and Lipton, 1984, p. 46

The principal feature distinguishing LDAs from both cooperatives and IAs is that they undertake a variety of different types of projects benefiting the area of residence of its

membership (Table 5.3). L2As tend to undertake nonpublic goods-oriented activities that corporations, tend to have more heterogeneous memberships and as a result have broader objectives than L2As (Elsman and Ughetto, 1994).

Corporations are, perhaps, the most commonly studied form of formal organization and are distinguished from the other two organizational types primarily due to their intention to generate profit-making activities and the formal mechanisms in place for the pooling of resources. They are private goods-oriented with respect to the benefits accruing to the membership and can be adequately analyzed in terms of the theory of the firm. LAs are distinguished from corporations by the motivation for membership in the organization.

LAs are not necessarily defined by geographic boundaries, nor are they characterized by a common pooling of resources. When membership is selected around a common cause (religious, political, local, or occupational) these organizations are termed functional LAs. LA-oriented around a particular characteristic or aspect of the members (race, religion, gender, occupation) are termed *single-interest* LAs. "As a rule, LAs will be less encompassing than L2As... but some of them encompass issues they are traditionally able to deal as well as economic interests and such public as well as private goods" (Elsman and Ughetto (1994: p. 16). Another L2A-like LA issue is the adequacy described by the traditional model of the economic firm.

It would be unusual to find organizations which are very closely knit and are in any of the other categories (Weisbrodt, 1994; Elsmas and Ughetto, 1994). However, NCCL is best considered a functional interest organization with some underlying or indirect proprietary motivations for membership. It is not an L2A due to the mechanisms in place to determine membership and funding. It is not a corporation because it is not primarily oriented toward providing direct benefits to its members or the members of others.

One of the distinctive features of local financial network associations is that they are often concerned with the broader social impact of their projects and programs. As EA "... focus primarily delivering a service. It was a service to bring about changes in a human being. It creates habits, values, commitment and knowledge. It attempts to become a part of the community rather than merely a supplier" (Shahar, 1995, p. 53). BECA is an example of such an organization in view of its initiation statement and chosen programs:

Profit-making organizations are not principally motivated by the external impacts of their initiatives (BECA is, however). Profit-making organizations and their stakeholders are primarily motivated by the financial return to their output and secondarily motivated by the external impacts of their production (e.g., decrease in local unemployment or pollution). BECA and, presumably, other NGOs use their programs (output) as a means to address their broader social goals/purposes. BECA's influence on external outcomes flows through its primary motivation of BECA membership. This external orientation makes the traditional concept of an economic firm somewhat misleading.

*In order to capture the diverse orientation of an NGO like BECA to a traditional economic organization it may be useful to coin a new term. While according to Agresti (1994) for any municipality, "NGOs (like BECA) are labeled *Community-based Organizations (CBOs)*. Community-based is "an governmental movement dedicated to the betterment of our moral, social, and political environment" (Joshi, 1995, p. 2). Community-based are committed "... to work with our fellow citizens to bring about the changes in values, habits, and public policies that will allow us to build the society that the environmental movement seeks to do for us: to safeguard and enhance our future" (Shahar, 1995, p. 8). Thus, BECA can be viewed as CBO. Viewed in terms of economic theory, BECA can be analyzed as a *Community-based Firm (CBF)*. If statistically significant relationships are found between measures (ones of BECA's output and intended*

otherwise, the conception of BECA as a CP, distinct in intention from a traditional economic lens, is supported. To quote Inghel: “the many environmental or conservation-related NGOs could be characterized as Conservation Organizations”.

Outcomes/Desired Variables

The influence of individual firms results in extended and extended/broaden social aspects. CO influence affects local employment, the stocks and flows of natural resources, and general social welfare indicators including educational or cultural norms. In addition to anticipated profit-seeking firm outcomes, CO-outcomes include changes in education levels, general health, nutrition, or in attitudes and behaviors regarding the environment. Facilitating production provided intervention and community participation are commonly considered broad-organizational goals of local NGOs (Jensen and Uphoff, 1994).

Carroll (1992) and Arora (1996) evaluate how American Foundations (CAF) promote surrounding the influence of programs on beneficiaries such as empowerment, self-sufficiency, credit, self-dignity, and living standards. They report the number of people reported by the CAF grantees programs, their socio-economic status, and the distribution of benefits of the programs. Changes in local income, policy results, and the “multiplier effect,” or the applicability of aspects of the organizations and its programs to other settings are assessed. From the point of view of the organizations, outcomes include organizational change and sustainability.

For BECA, the set of extended outcomes is grounded from its mission statement and bylaws. Based, BECA's mission statement indicates a commitment to encouraging sustainable economic development, enhanced environmental awareness, and the conservation and preservation of the flora and fauna and marine and terrestrial ecosystems of the Bay Islands (Jensen, 1994).

In general, NGO mission statements involve broad, long-term and more sweeping goals and objectives. Rather than provide precise and measurable objectives, mission statements tend to

influence the organization's intended decisions. Programs are the vehicles by which organizations meet their goals and objectives. BICA's output programs should be designed to reach its overall stated goals; outputs should map the intended outcomes of BICA as presented.

Finally, the ability of BICA to manage the Bay Islands coastal environment is not only influenced by the Bay Islands' natural and cultural context, the natural resource base, and the structure and behavior of the organization, BICA's effectiveness is influenced by changes in supply and demand conditions which generate and lower spatial order. For example, when there is an oil spill in the Gulf of Mexico, a change in fishing practices in Honduras, a hurricane in other parts of the Caribbean, or a forest-related health crisis in the United States, the supply and demand of resources from the Bay Islands are impacted. If the Honduran government enforces environmental laws, changes foreign investment regulations, increases expenditures on education, or provides storage and water treatment facilities, the need for availability of BICA is enhanced (the quality and quantity of health care in the Bay Islands is affected).

Hypothesized Model of BICA as a Communication Firm

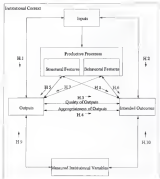
In order to facilitate the understanding of BICA, the variables which may influence the ability to produce BICA's performance can be represented into three categories: output-oriented, outcome-oriented, input oriented, organizational-system-oriented, and production process or management-oriented domains. The focus of this analysis is on the manner in which production inputs are converted into objective fulfilling outputs and the potential connections between outputs and outcomes (outcomes). In addition, the hypothesized, economic, and culture-based institutional context and the natural resource context influences the ability of the firm to meet its objectives. They are results of BICA's direct influence and particularly impact the broader societal outcomes of its behavior.

Resolving the research hypotheses formulated in Chapter 1 (Table 1.1), Figure 2.1

illustrates how hypothesized relationships through a model of BECA as a Communication Flow within the context of the Big Islands. For example, on the left side of Figure 2.1 the arrow between Inputs and Outputs identification (R.1) represents the hypothesis that "a relationship exists between BECA's inputs and the quality of its outputs." BECA is viewed as a CF and relationships are proposed to enhance the resolution and reveal the conceptual and analytical differences between traditional economic forms and CFs.

In Figure 2.1 inputs are seen to be transformed into outputs via production processes. The quantity and quality of available inputs influence the structure and behavior of BECA. In turn, input availability influences the choice and quality of BECA's programming and the intended realization of BECA's formal goals. In addition, BECA's structure, behavior and systems influence the availability of inputs. Program design and success influence BECA's existing structure and behavior. The perceived attainment of BECA's goals helps to form the Government's own goals, programs, structure, behavior and its ability to harness new resources. Success of the Big Islands provides the motivation for BECA's existence and influence its structure, behavior, and its performance. Finally, BECA influences the human and non-human environment of the Big Islands, thus influencing its future role and potential for success.

In short, each of the proposed components of BECA as a CF interact with each of the other components over time. These relationships are dynamic, resolution and iterative. The analysis provides a map chart of these interactions. The formulated hypotheses reflect a two dependent relationship whose derivation is derived from tradition and economic theory (Figure 2.1). Chapter 4 describes how the information required to reveal these relationships is derived. The methodology advanced describes the manner in which these variables primarily influencing BECA's performance can be investigated and evaluated from among these many variables proposed as the literature.



Key: Solid lines indicate universal/robust findings

H.6s with arrows indicate tested relationships

Example: H.1 \Rightarrow means Hypothesis 1 tests the relationship in this direction.

Figure 3.1. Hypothesized Relationships of BECA as a Communitarian Firm

CHAPTER 4 EMPIRICAL RESEARCH METHODOLOGY

Introduction to the Global Text-Book Approach

To enable to gain a deep understanding of BICs and contribute to BICA research!

Understanding of these issues leads to the greatest extent possible, an improved research methodology as appropriate that:

- incorporates the in-depth knowledge of the functions of the BICs and BICA,
- enhances the BICA's ability to self-assess and to achieve its objectives,
- enhances the practical role specific features of BICA, and
- raises any potential discrepancies of BICA which might generate in other similar organisations.

A methodology building on the analytical and interpretal framework outlined in Chapter 2 is applied from existing research methodologies to assess the predictors of BICA's performance. The descriptive methodological features include: a comparison that theory is less than definitive, local organisations are thought to possess very role-specific characteristics, and the individual-level values organisations operate in the achievement of organisational goals. These features contribute complementary information to a traditional analysis of the structural and behavioural characteristics of an organisation.

In this chapter the research methodology is reviewed including a description of the procedures undertaken in the empirical inquiry. The next section describes the ethnographic techniques that are central to the case study method in the context of providing the most comprehensive understanding of BICs possible. Subsequent sections will detail the objectives and procedures employed in the two complementary aspects of the research methodology. A review will

generality of the adopted research methodology, its procedures and techniques comprise the fourth chapter.

Overview of the Adopted Educational Research Methodology

A case study approach is adopted as recognition of the specificity of local organisations. It draws on procedures in the literature (e.g., Carroll, 1992; Arora, 1999; Webb, 1999; Evans and Upton, 1993; Upton, 1994), and details descriptive detail reflecting case study methods (Bryman, 2003). However, a more systematic interview and survey approach is utilised with case study methods to enhance the probabilistic predictive power of the research effort. A hybrid methodology combines the positive aspects of both deductive and inductive reasoning and qualitative and quantitative information, while mitigating several of the weaknesses or using either one type of approach or the other.

A hybrid approach—developed in the framework (Figure 1.1) serves as the underlying framework from which the analysis proceeds. The ethnographic research design can be divided into two sections, model construction and model testing. The model construction portion of the framework requires primarily inductive reasoning, while the model testing portion involves primarily deductive skills. The inductive portion yields quantifiable and non-quantifiable data, while the deductive portion, traditionally, only makes use of quantifiable data (Shaw, 1999).

The model construction portion of the framework involves an iterative process of variable definition and refinement based on the results of unstructured or semi-structured interviews. The resulting model is adjusted with each subsequent interview and new insights. Adjustments are supplementary related through the process of iteration. Formal steps and questionnaires are employed, but also open-ended questions and dialogue techniques are also used. The researcher learns through careful listening, interpreting and reasoning with individuals. Studies employing

that challenges are more productive than more traditional approaches in terms of understanding problems and finding innovative solutions (Goldschmidt, 1994).

Central to the ethnographic approach is that individuals understand their own situations better than researchers do. In order to understand human behaviour, it is necessary to understand how individuals perceive her current and future situation, constraints and opportunities. It is not possible to understand the salience of informal policies or stakeholders unless they are considered from the point of view of the stakeholder (Baskin, 1990).

After 15-20 interviews the amount of new information derived from further interviews provides little additional insight into the predictive variables of the model and a composite model is constructed from the cumulative insight gained from the extensive interview process. The benchmark of thirty interviews is borrowed from the Grounded Theory. Glaser (1989) recommends sampling as long as it is not saturated prior to constructing a composite model. The actual number of interviews depends upon the complexity of the subject studied, the quality of the information collected and the skill of the researcher.

In this study 18 interviews were conducted of BCCA's resident adult membership over a one month period prior to setting up a final formal survey format. Preliminary semi structured interviews varied from 30 minutes to two hours. Central topics were considered relevant to understanding BCCA, values the members of the Bay Islands. Groups of related resident membership interviews were conducted during the model building period. The interviews facilitate an early understanding of the Bay Islands' environmental context and the role of BCCA within that context.



Source: Adapted from Glaser 1989, p. 12.

Figure 4.1 Model of a Hybrid Inductive-Deductive Research Methodology

If existing theory is well grounded, it is expected that many of the predictive variables revealed will be consistent with previous theoretical knowledge. However, many variables are needed to build a "rich" understanding into the researcher's "rich" knowledge (Spradley, 1979, 1980, Spradley and McCurdy, 1982). Additional variables may be revealed, which are not commonly found in the literature. Certain, theoretically prescribed variables may be appropriate without particular content. They are dropped from further analysis. Constructed models derived from the iterative interview process have the potential to be both more comprehensive and more efficient than those derived inductively. The model of BECA will differ significantly from a model deduced solely from the variables used in the literature.

The model testing portion of the ethnographic framework is the family of techniques employed by quantitatively-oriented analysis. A formal questionnaire is constructed based on theory and, in the case, the advances in knowledge derived from the inductive inquiry. The survey process is implemented according to statistical research conventions (Figure 4-1). Quantifiable data are collected and organized according to accepted methods. Models are specified and tested for significance according to theory, logic, statistical conventions and statistical techniques. The summative portion of the analysis provides a means to understand the relationships and variability among the revealed predictors and dependent variables under analysis.

Social sciences prone to more-disciplined work have a tendency to understate the first portion of the ethnographic design. The more quantitative fields tend to address only the second phase. Together the two portions of this framework provides a more complete research design than either of the two parts taken separately. The ethnographic framework is particularly suited to situations where theory is incomplete or under-developed and where prediction is among the central objectives of the research.

This approach is appropriate to an analysis of BECA for several reasons. BECA members formed BECA. They define and evaluate BECA's mission and implement its programs. They clearly have the greatest knowledge of BECA and will reflect in future based upon their perception of reality in the Bay Islands.

Although "objective," the goal of this work is not to provide an "objective" evaluation of BECA individual programs, but rather to gain an understanding of how BECA works. This understanding is most useful for BECA members themselves. The members' opinions of the features of BECA and the Bay Islands provide the best available information toward the evaluation of these research objectives.

Explanation of the Hybrid Research Design

This section first addresses the boundary conditions adopted for this study. It proceeds to answer phase one and phase two procedures and the products of these efforts.

Level of Analysis/Boundary Conditions

The level of analysis is considered both in terms of the individual human and the non-human systems. In this human environment emphasis is on the level of the local organization. The local organization is most clearly visible within the local community. BECA provides a cooperative forum for the expression of some of the interests of local individual members. In fact, individual members may represent other interests and are influenced by interests internal and external to the organization and the local community.

Every BECA has three headquarters and seven right to two-hundred communities throughout the Bay Islands. It may be considered a regional level organization. However, the majority of its efforts are independently initiated by one of the branches located on each of the three principal Bay

Islands: Space is not perceived as local and broader scales are suboptimally, BECA a community is locally coordinated local effort.

From a multiscale systems perspective, the action taken by a small local organization/area greatly impacts on the general health of the fish and focus at the community management level. BECA has pragmatic secondary impacts at the low-complex system-population level, but also at the broader regional or landscape level (Gardner 1992, 1994).

Given an ethnographic approach, analyzed broadness typically fail to draw considerably to have the greatest amount of knowledge of BECA's approach, structure, function, roles, strengths and weaknesses – as membership. However, BECA has both members who are residents and those who are non-residents of the fish islands. These members who are non-residents are either tourists or past residents. The former comprises majority of the group. While tourist membership increases are expected in BECA, they are most likely structurally motivated ("as a good story"). Tourist members are likely not influenced or motivated by BECA's performance.

Past residents may be motivated by BECA's performance. However, they cannot be maximally motivated to give personal benefits or production from BECA's behavior. They are unlikely to be influenced about its activities. The population of all current, which, members residing on the islands of Gili Gede, Ulu, or Ronda is most likely to be influenced about BECA and concerned with and responsible for its performance. Current, which, resident BECA members comprise the target population for this analysis.

A general definition of the target population is established by several factors. According to BECA's bylaws a current member is an individual or business which has paid fees for the current calendar year (from thirty percent downwards). However, due to poor management practices of BECA, these definitions have not provided an accurate picture of those individuals and businesses which are currently active or make contributions to the ongoing performance of the organization.

First, it is standard practice to require a payment due prior to the last capital year of an individual's membership (Chris Pedersen, personal communication). For example, suppose someone became a member of BECA in 1995, and for four years afterwards always was a resident financially in the rest of the world as in 1995, she would be a 1994 member. She would be a member for 1990 and 1991 who "runs short" for 1992-1993. This practice protects the actual, current, financial membership of BECA. Finally, the number of current adult resident members is severely understated because BECA is "a year behind" in collecting its dues."

Secondly, the finance chapter of BECA already contains all of the membership data collected in any of the three chapters. This provides a clear delineation to the other two chapters to encourage financial contributions in lieu of or in-kind contributions. Not surprisingly there have been very few non-resident members from either India or Chicago over the years, despite an active BECA presence in India.

To understand the performance history of BECA from the perspective of those most qualified to evaluate them, a broader definition of membership is required. BECA members are defined as all those individuals or businesses which contribute financially or in-kind to BECA programs and who reside in the islands' territory of the rest. Adult members living on the islands are considered to have the most information about and influence over the structure, function and performance of BECA. They also comprise one of BECA's most important constituencies. From that membership BECA can hope to gain local support for organizational initiatives and volunteer assistance with its projects.

BECA's mailing list encompasses all of the Mexico office, 26 of the 258 individuals on the membership list over 184 long before on the Mexico's mailing list in another country (mostly the United States). Eighteen local businesses are listed as contributing members on the 1994 list. In 1990 there were five on it in any given month and as many as 76 in the Cruz, personal communication). Over 50% of the remaining 200 resident members held student memberships. About 60 adults and 1

adult students are *Bozorgmehr*ans. Forty adults and 10 students constitute the *Usta* membership. Twenty-five adults and three students are members of *BECA-Guangy*. In addition, *BECA-Usta* maintains an "invited membership" list of over 40 people. The list includes local politicians and business owners as well as members.

After personal interviews with the *Bozorg* list, 25, 12, and 15 women, respectively, adult students on the charts of *Bozorg*, *Usta* and *Guangy* are identified, respectively. The *Bozorg* list is supported by participants that volunteer as local participants but does not constitute a membership. The *BECA-Usta* list is composed by 25 individuals and business owners cited by members of the *Bozorg* or *Bozorg* members regular and participating students. In sum, 40 *Bozorg* members plus 40 *Usta* members and 15 *Guangy* members constitute the population of 135 adult, resident, potentially functional members of *BECA*.

Stage 1: Qualitative Analysis and Survey Development

In the first stage of the empirical portion of this study an effort is made to gain a complete picture of *BECA* as a *Communitarian Firm (CF)*. Stage one employs largely inductive semi-structured interviews and limited participant observation techniques developed and refined in the disciplines of the qualitative and/or cultural anthropology.

There are three principal objectives associated with the first stage of the empirical portion of this study:

- (1) Provide a complete qualitative description of *BECA* as a CF. This description includes *BECA* origins, mission, vision, and characteristics of the productive relationships and practices.
- (2) Provide sufficient information to construct the descriptive organizational components and organizational/productive relationships with a quantitatively-oriented questionnaire. The next questionnaire will provide a preliminary model suitable upon the general population of *BECA*'s membership, and
- (3) Provide a detailed description of the institutional context within which *BECA* functions such that its ability to perform can be evaluated in light of the enabling and debilitating features of its situation.

Researchers identified several existing data sources to explore issues in understanding the relationships among aspects of EICA in various management process. Researchers used the relationships among member participation, project implementation, organization and member objectives, characteristics and outcomes. Initial interviews are guided by the variables used in previous studies referenced in Chapter 3. Information is gathered from interviews of members of EICA and supervisors of various groups of members.

An initial sample employed focusing on the variables found in the literature. Subjects facilitate an appraisal of the factors specifically with regard to EICA. Additional, open-ended questions surrounding organizational objectives, characteristics and performance allow for unique features of EICA to be revealed. Responding with a single provides focus to the interview and reduces the time required per interview. Studies reduce the number of interviews needed to bring the questionnaire into a form conducive to formal modeling for descriptive and predictive purposes.

Initial interviews of EICA's membership are based on the current list of members obtained from its main office. Selection is based on a maximum stratified random sampling procedure. This procedure is used in order to speak first to those who are most active in the community and in the organization. Beginning with active EICA volunteers working in the main office leads to interviews with other identified active members. Based on their recommendations, members who have an informed opinion of EICA and an institutional context are identified.

In the process of conducting single case interviews, two subtle steps involving and then countermeasures were taken were identified as information eliciting procedures due to perceived biases in the information obtained. Information collected using these techniques often appeared to reflect what the respondent felt the interviewers or the leaders of EICA would want to hear rather than her actual considered opinion. Respondents did not appear to believe that their responses

would be confidential when formal recording techniques were used. Ultimately, a recording technique was adopted which requires the interviewee to record all information revealed in the interview by vocalising immediately following the completion of the interview. This technique was employed for the step-wise unstructured and semi-structured interviews as the least obtrusive and most actively nonjudgmental information collecting method. Information obtained through this interview technique was perceived to be decidedly more reflective of the opinions of BICA residents and communities with the style of the key informants.

Twelve formal interviews in conjunction with a literature review formed the basis for developing the first draft of the survey. The formal written format was used in its additional semi-structured and interviews and again adopted. The resulting formal written survey was formal and further adjusted for language structure, length and content by again interviewing 12 of the 12 formal interviewees including four active speakers of Spanish. It was felt that a reasonable interview time people willing should not exceed about 20-30 minutes. Further input is to decrease the instrument length, to reflect these results and to identify language difficulties.

Interviews already conducted in a formal written and oral survey format covering the relevant aspects of BICA and its associated issues. The oral format served as the principal source of quantifiable information. The written format specified those residents who could not be contacted, did not have time for the oral format after several attempts, or were not comfortable with the oral format.

One measure of the value of this approach relative to a completely theory driven strategy, was comparison of the variables already used in the survey instrument. If all of the theoretically predicted variables were included in the model derived from this approach, the likelihood of no further questions might be brought up. It is expected that more of the variables related to the literature will be inappropriate to the understanding of BICA. It is also expected that future

subject to BECA and the key islands subject to visit in the model formation stage of the methodology. Justification of the employ of the more basic measuring and indicator approach requires an improved understanding of the non-overlapping traditional methods.

Local persons that many of the formal outcome measures proposed by Jones and Uphoff (1994) are appropriate to BECA including changes in education level, attitudes and behaviour regarding the natural environment. Five of the measures implemented by Jones (1990) and Carroll (1992) are appropriate measures for BECA. The number of people affected by BECA programs and the distribution of benefits derived from the programs are applicable outcome measures related to these studies.

Several other outcome domain output related variables measured by Jones (1990) and Carroll (1992) were retained by the local survey domain. The ability to sustain resources is converted into two separate variables reflecting local and external food saving programs. Capacity growth of the organization and the ability to make water/land claims are also adopted as localized items. Member service provision measures (Carroll, 1990; Wade, 1994) and resident service delivery (Carroll, 1990; Carroll, 1992), are adopted as measurable output variables.

Almost all of the input variables proposed in the literature are included in this analysis. Human capital issues including literacy rates, education and health are included as demographic variables. These measures are represented by a number profile. An assessment of the influence of natural capital on the behavior and performance of BECA is incorporated into the evaluation of the natural resources context of the islands. Many of the physical capital measures are incorporated into the structural domain of BECA. However, they are represented as qualitative and externally assessed information rather than variables to be addressed in the formal survey.

All of the institutional context features proposed in the literature are addressed.

Institutional features are evaluated either through the questionnaire or, directly, through participant

and subsequent strategies, setting documents and related activities. With the exception of technical literature (García 1992), each of the production process variables either finds a place in the formal survey or is assessed within the particular context of BECA.

In case, five of the outcome and output variables found within the literature are primarily within the purview of BECA. On the other hand, many of the institutional context, production process and input variables are well specified in the literature and appropriate to the analysis of BECA. However, not all institutional variables are resolved in a survey approach. Those variables that can be meaningfully evaluated by means of survey are included. Those variables that cannot be addressed in a questionnaire are evaluated via other available information collection techniques. Due to the specific needs of the survey, some of the variables appear primarily as they are presented in the literature. Rather, a systematic approximation of the responses is found which is meaningful to the community.

Phase one activities include a review of documents detailing the history, mission, objectives, activities, membership, training, funding and other aspects of BECA. Existing documents prepared by the United Nations Development Programme (UNDP) in cooperation with the Government of Honduras (GOH) and by Tropical Research and Development Incorporated (TRADI) prepared for the United States Agency for Development's (USAID) Peace-Peoples Project provide baseline information from which to assess the institutional context. Complementary information was found in BECA newsletters and local popular publications (e.g. *El Libro Pasa*, *El Correo*, *Telegraph*) in consultation with other sources of information. Knowledge of BECA's historical role in the community provides insight into BECA's evolution, adaptations and autonomy that would otherwise go unobserved.

Action and early participant observation in the community and in BECA activities, meetings, daily operations and programs conveyed awareness of the local people regarding the

issues and methodologies for this research. The master's relationship-of-trust was developed, the master collected information relevant for the conditions in BCCA and the Bay Islands. To these ends, hundreds of volunteer hours were spent in the BCCA offices helping with an AIDS awareness survey and education project, providing computer assistance, answering the phone, selling t-shirts and paraphernalia, and talking to everyone about BCCA.

A concerted effort was made to integrate as quickly and completely into Bay Island society as possible. Lodging was arranged in one of the traditional Bahamian land houses (separate from other than as a house) or with grandparents. Attention was paid to integrating into everyday routines and relationships. An attempt was made to understand, within the time available, the perspective of each of the many different people of the Bay Islands: musicians, islanders, expatriates, club goers, sailors/tourists, bus drivers, shopkeepers, shop owners, construction workers, other masters, loggers, divers, doctors, dentists, women, national staff.

Frequent informal conversations were taken in-depth with BCCA members and non-members regarding BCCA efforts in the economic development of the Bay Islands. Impediments about the efficacy of their current and past programs were sought. General characteristics of BCCA and the Bay Islands that might influence the success or failure of national economic intervention or long-term economic development initiatives were discussed.

Stage 2: Developing a self-formal modeling

In phase two, the research shifts from the narrative and inductive process to the more deductive, formal modeling portion of the ethnographic research model. Two key attempts to reveal the identity of the respondent, individually, in order to get responses by relationship category (quantities or individual): location (Clarence, Little, or Bimini); first language; gender and membership in the Island of Clarence, for example.

Members are asked to respond to a number of different types of statements. It does not, however, require any indication as to which the individual believes a particular feature of BECA or of the Big Labels exists. In other cases, responses indicate the degree to which the individual believes a particular feature is either necessary or appropriate for BECA to reach its objectives. The survey employs a frequency Likert scale to provide subject ratings of graduated responses to each statement. A "no opinion" option provides a sixth possible response to each statement.³ There is an assumed 50 probability of choosing each response for each question. In addition, responses are encouraged as indicators of responses through open-ended questions found at each section of the final survey.

Survey statements are divided into four sections: intended outcomes (4 statements), outputs (21 statements), internal and external influences on organizational behavior (39 statements), and member characteristics (13 statements). Outcomes-oriented statements are intended to assess progress or actual conditions relative that hypothetical or intended performance. Output-oriented statements are concerned with performance and defining the appropriate role for the organization given its perceived needs/needs.

Statements surrounding internal influences on BECA include an assessment of the political, governmental/legal, economic and culture-based environmental context. Organizational influences on BECA's performance include its structural and behavioral characteristics and measurement of its inputs.

Questions of member characteristics provide a profile of the membership including age, ancestry, gender, affiliation with other organizations, level of education and first language, for example. This information provides the possibility to draw distinctions between the perceived

³Appendix 3 reports the frequency, mean and standard deviation for each of the statements included in the internal and survey.

productivity of performance among the three branches (Urbis, Rustica, and Campagna) of the same organization, by gender, nationality and first language.²

Approximately 28 percent of respondents speak Spanish as their first language. Some interviews were conducted in Spanish and some in English depending upon individual needs. Many, although certainly not all, BICAs belong to the fully bilingual. About 42 percent of responding members are Ecuadorians and 58 percent of respondents are women.

Due to the relatively small number of members, the entire population of 117 constitutes the sample space. Whenever possible, each member was contacted by telephone to arrange a meeting. When unsuccessful, the home or location of each individual was noted up in field notes, as necessary, in order to make real life face-to-face survey appointments. Nevertheless, it proved highly time consuming to make and keep appointments. Telephones are not widespread among the membership. Addresses are not particularly useful. No BICA meetings were consistently planned and access to radio communication was not available. As a result, using the most efficient method, written responses was almost inevitable for members who resided far away from study.

The closed survey process was conducted over a one-month period by one person. Plans for resulted in 62 completed surveys, 24 oral and 7 written in Rustica, 18 oral and 2 written in Urbis, and 12 oral in Campagna. On Rustica 18 individuals could not be contacted after three visits. There were four refusals in Rustica. Two individuals in Urbis refused to be interviewed and 14 could not be contacted within the time allowed. There were no refusals and seven individuals could not be contacted in Campagna.

Response rates in the survey are 52 percent for Rustica, 24 percent for Urbis, 63 percent for Campagna, and 50 percent for the total resident adult national membership of BICA including women.

²Appendix 4 provides a further tabular illustration of members' responses to each of the closed/open questions by type of survey location, real vs. virtual language (Spanish or English), nationality (Ecuadorian or non-Ecuadorian), location (Rustica, Urbis, or Campagna) and gender categories.

response: Reporting statistical estimates (and ranges etc.), 44 percent of the Russian member population, 48 percent of the Ukrain, 43 percent of the Chechen and 40 percent of the total member population responded in the end form of the survey

Refusals: constitutes nine percent of the population. They can be in two principal social groups: "no time or interest" and "did not feel knowledgeable enough about the organization to provide informed responses." Temporary absence of the most common reason for nonability to contact members (11 individuals). Reasons for absence include business, illness and vacation.

The maximum time for an oral interview is 15 minutes and for a maximum is 1-1.5 hours. The maximum time is about 40 minutes. Temporal variation in survey responses is explained by the amount of disturbance in statements provided by respondents, the length of open-ended responses and the degree of interruption during the survey. Interruptions in statements occur during interviews are evaluated as the member's place of business.

Following the survey development and implementation stages of the hybrid research design, the derived survey data are organized to reveal BICA's components, processes and patterns. Categorized data represent the respondents' self-rated experience of the degree of existence, intensity and correlation among the dependent and independent variables. Therefore, provide their perceptions of the performance features of BICA. It is likely that some of these perceptions are "factual" and some are heuristic observations, rather, or measures that do not reflect "reality." Relationships among BICA's structural and behavioral characteristics: processes, environmental conditions and functions or outputs are analyzed using appropriate parametric and nonparametric statistical techniques. Principal modeling techniques are employed to identify combinations of variables that predict variation in organizational outputs and outcomes. Bi-related relationships represent correlations among the individual member's perceptions of features of BICA and are not intended to be construed as causal.

A first order multivariate linear regression specification is used to estimate all relationships except as set out of cases noted below. It is logical to expect this multiple-linear relationship exists between the indirect expression of students' perceptions of BICA's performance history. Further, since one theoretical justification is needed to expect other than a linear relationship among the measured relationships, second degree interactions between performance and appropriateness criteria is specified as the generalized estimated relationship between outputs and outcomes. F -statistics are used to evaluate the statistical probability of the existence of a regression surface across the relative performance of structural and non-structural models.¹² Estimates are designed to reveal the relationships among the predictive and dependent variables and to test each of the hypothesized relationships.

T -statistics are used to evaluate the statistical significance of individual parameter estimates. T -statistics are also employed to estimate the probability that the nonparametric results by category are statistically different in a question by question basis. Hypotheses tests of the significance of parameter values are evaluated using the standard Student's T -test. However, to determine whether the nonparametric values were statistically derived from one another as appropriate, test for unequal variances, sample sizes and independent samples is appropriate (Zar, 1988).

The parametric analysis results in a model of BICA as a Commensurate Firm. The variables of the predictive relationship represent the characteristics of BICA and impact of the Big Islands' institutional context. The values of the categorical variables represent the degree to which BICA exhibits each characteristic.

¹²Appendix D reports the relevant estimated relationships including parameter values and their statistical significance, statistical confidence in the treatment of compression, observations and degree of freedom for each estimation.

¹³Appendix E reports the results of the specified models for each of the 10 proposed hypotheses.

The results of these standardized estimations are analyzed in light of the insights generated from literature and participant observations over the data collection period. The inclusion of complementary qualitative information provides a more complete impression of BICA, and the quality of the data or the observational skills of the researcher.

Particular attention is paid to recording predictions of performance which are consistent with the literature or local expectations. In addition, the performance features of BICA that might provide new or unique insights to the literature are noted. This analysis is presented in Appendix. Afterwards, describing "what is," light can be thrown on aspects of BICA which are helpful to the achievement of its objectives. Thus, normative "what should be" policy recommendations are appropriate features highlighted in Chapter 7.

CHAPTER 4 RESULTS: AN APPRAISAL OF THE FEATURES INFLUENCING RICA'S PERFORMANCE

Introduction to Describing the Results of the Research Effort

The results of the formal survey are interpreted in light of the information generated in stage one of the research methodology in Chapter 3. In the survey, RICA members are asked to indicate the degree to which they agree or disagree with each statement. Rankings are based on a five-point ordinal scale. A rating of four indicates strongest agreement with the statement. Four is indicative of agreement with the statement. Three is a neutral response. Two indicates disagreement and one is strong disagreement. Data is used in those cases where members choose not to give a response. Responses are included in the reported results, as some items before and are not possible.¹ Responses are reported and analyzed in three distinct forms. (1) mean scores for each of the assessed features of RICA and the key beliefs; (2) a graphical representation of the relationships among these assessed domains; and (3) a similar depiction of the results of statistical analysis of these proposed relationships. To evaluate the hypotheses proposed in Chapter 3 to understand the features of RICA and the key beliefs potentially influencing RICA's performance are:

- (H1) A relationship exists between RICA's capacity and its inputs
- (H2) A relationship exists between RICA's capacity and its intended outcomes
- (H3) A relationship exists between the quality of RICA's programs (outputs) and the achievement of its intended outcomes
- (H4) A relationship exists between the appropriateness of RICA's programs (outputs) and the achievement of its intended outcomes

¹ If a survey item and a related deviation of responses to survey statements are found in Appendix 1

- (H-1) A relationship exists between the structural features of BICA and its outputs.
- (H-2) A relationship exists between the structural features of BICA and its intended outcomes.
- (H-3) A relationship exists between the behavioral features of BICA and its outputs.
- (H-4) A relationship exists between the behavioral features of BICA and its intended outcomes.
- (H-5) A relationship exists between the constitutional features of the Bay Islands and the success of BICA's programs (outputs) and
- (H-10) A relationship exists between the constitutional features of the Bay Islands and the achievement of BICA's broad-based outcomes.¹

Recall that BICA is viewed as working toward meeting four broad goals. Taken as they appear in the survey and as BICA's mission statement, the Association's broad goals expressed as "intentions" are presented and evaluated in Figure 3-1. Concerning BICA's ability to reach its goals as intended outcomes, BICA members feel that the Association has been most successful at creating environmental awareness throughout the Bay Islands. Although mildly positive, members are least bullish of BICA's record at the conservation and restoration of representative habitats and endangered species (Figure 3-1).

Furthermore, does BICA engage in right types of activities in an effort to reach these broad goals. Taken as they appear in the survey, BICA activities expressed as "outputs" are presented and evaluated in Figure 3-2. BICA members feel that BICA has been most successful at maintaining compliance with environmental regulations, rather raising funds from outside of the Bay Islands. BICA is seen to be least successful with its waste management program (Figure 3-2). In general, BICA members feel that BICA has successfully implemented its programs and other activities.

¹ Essentially speaking, there are the alternative hypotheses counterparts to the null hypothesis stating that these proposed relationships do not exist.

² The explicit form of the proposed relationships in Bay Islands hypothesis is located in Appendix 3.

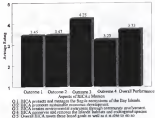


Figure 3.1 Members' Rating of EICA's Overall Performance

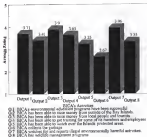


Figure 3.2 Members' Rating of the Success of BCA's Activities

Hypotheses Relating to BICA's Inputs and Its Outputs and Outcomes

The analysis results in a model of BICA as a *Communications Firm* within the institutional and natural resource context of the Bay Islands, Honduras. The emerging model highlights the features of the BICA within Bay Islands which are predictors of BICA's success. Focus is on revealing relationships among variables' importance of BICA's performance features, rather than in processing or deriving functional relationships among its inputs, structure, behavior, outputs and derived outcomes.

A relationship between BICA's inputs and its outputs is proposed (Hypothesis 1) (Figure 1.2). *Inputs* include the domains of the causal hypotheses derived from economic theory. As indicated in Chapter 3 (Figure 3.1), three relationships are actually thought to be interactive and, therefore, in both directions. The use of such terms indicates these variables that will be considered "independent" and the designation of such terms indicates these variables considered to be "dependent" in the methodology relationship. Structure (a perspective of BICA's inputs) are reported in Figure 1.4. Each of the eight identified outputs are independently regressed against the set of five assumed input variables in line with economic theory, outputs are viewed as the dependent and inputs the independent variables in three extensions. The results of the statistically estimated relationships are reviewed in Table 1.1.

Hypothesis 1 is derived from economic/economic theory. An economic organization's physical, human, natural and financial capital are thought to be converted into outputs via the organization's productive processes. Both the quality and quantity of inputs available to BICA theoretically influence its performance. Five input-related variables are measured quantitatively: the number and accuracy of the staff or training to implement successful programs are posed as human capital-related variables (Inputs 1 & 2); the number and accuracy of adequate facilities proposed

on financial capital entered variables (Inputs 1-4-5) and the adequacy of BECA's own income as a funding source for physical capital (Input 2) (Figure 2-4).

Members are neutral to positive on whether BECA members and employees have sufficient staff and training to carry out BECA programs (Input 1). Moreover, members are strongly supportive of the need for investment in the human capital of members and employees (Input 2). In terms of the availability of sufficient financial capital, members feel strongly that BECA is financially constrained (Input 3). Moreover, financial support is seen necessary to ensure successful programs and the achievement of overall objectives (Input 4). BECA's own income as source of personnel, financial, power- or physical resources is seen to be totally constraining its effectiveness from the perspective of BECA's members (Input 5).

At least two types of information can be gleaned through the statistical analysis of these relationships. First, information is provided regarding the potential relationship of the perceptions of individual inputs versus the perceptions of the success of BECA's outputs. Secondly, information is provided regarding the potential relationship of the perceptions of all of the measured inputs taken together versus the perceptions of the success of each of BECA's programs taken individually.

In general terms, evidence in support of the existence of a regression is revealed between inputs and/or a single output (Table 1-1).⁴ Relatively strong relationships are found between members' perceptions of BECA's available inputs and its ability to implement wildlife management programs and/or other protected areas. The adequacy of funds and training among BECA personnel and members is shown to be the most consistently significant correlate with programmatic success. Thus, although there is evidence to support the contention, it is not sufficient to confidently conclude that member evaluations of BECA's inputs are correlated with its ability to produce outputs based on statistical analysis (Figure 2-4).

⁴ Details of regression analyses can be found in Appendix B.

Inputs

- (1) Adequate staff (unpaid personnel / human capital)
- (2) Adequacy of staff development (investment in human capital)
- (3) Adequate resources (financial capital)
- (4) Adequacy of equipment
- (5) Adequacy time (physical capital)



Outputs

- (1) Environmental education
- (2) National fund-raising
- (3) National fund-raising
- (4) Staff and training of personnel
- (5) Monitor potential risks
- (6) Solid waste management
- (7) Detect and report environmentally harmful activities
- (8) Manage wildlife

Intended Outcomes

- (1) Protect and manage ecosystems
- (2) Promote ecologically sound economic development
- (3) Create environmentally soundness
- (4) Conserve and restore habitats and endangered species

Figure 2.1: Illustration of Hyperboreans Input, Output and Outcome Relationships

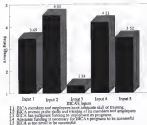


Figure 2.4: Membership Rating of EBCCA's Available Inputs

Table 1. Tests of Hypotheses 1 (correlation relationship with outputs)

Output/Inputs	1.1	1.2	1.3	1.4	1.5
(Q 1) BICA's environmental education programs have been successful.					
(Q 2) BICA has been able to raise money from outside of the Bay Islands.					
(Q 3) BICA has been able to raise money from local people and tourists.					
(Q 4) BICA has been able to get training for some of its members and employees.	++		+		
(Q 5) BICA has been able to initiate anti-littering ^a projects on the islands.	++			++	
(Q 6) BICA reduces the garbage.					
(Q 7) BICA teaches formal reports illegal environmentally harmful activities.	++				
(Q 8) BICA has wildlife management programs.	+			++	
Key to Independent Variables: (1.1) BICA personnel have adequate training (human capital) (1.2) Training is necessary (for economic development) (1.3) BICA has sufficient finances (1.4) Finances are necessary for BICA's success (1.5) BICA is successful (physical capital) Key to results: ++ = post-regression at 95% confidence, positive correlation; + = 90% confidence, positive correlation; / = 90% confidence, negative correlation; - = 95% confidence, negative correlation.					

A relationship is hypothesized among BICA's inputs and its intended outcomes (Hypotheses

2). This postulated relationship is derived from the perception of the Government/First BICA members may be associated with the realization of BICA's broad-based objectives rather than its programs. Program success may be seen as the means to an end. Thus, BICA members may be more likely to perceive a link between inputs and intended outcomes than inputs and outputs. However, broad-based outcomes may be more globally influential in the behavior of BICA. Changes in social behavior are influenced by a number of complementary and competing factors. Some of these influences consider the desire and short-term interest of BICA, but many of these are not. As a result,

Experimental Relationship between BICA's Outputs and Outcomes

A relationship is proposed among BICA's outputs and its desired outcomes. Moreover, given BICAs's outputs may contribute to the achievement of its outcomes, the appropriateness of chosen programs (Hypothesis 1) and the quality of their implementation must also exist (Hypothesis 2) (Figure 5.1). Both of these hypotheses are derived from the emergence of BICAs as a CP. They are based on the premise that in order to "make its broad social goals, BICA not only must implement high-quality programs, but also must choose activities commensurate with those broader goals."

Member ranking of the quality of BICA's programs has already been reported (Figure 5.1). Member ranking of the appropriateness of BICA's chosen programs are strongly positive with the exception of the total waste management program (Figure 5.1). BICA members indicate that BICA has chosen its programs wisely. The overall rating of the appropriateness of the programs that BICA chooses to undertake is almost a neutral to positive response.

Table 1.1 measures some of the revealed relationships between the quality of BICA's outputs and its intended outcomes. Strong evidence is revealed for the existence of a response between each of BICA's outputs and each of its broad outcomes. The performance of individual programs correlates differently with particular outcomes. The two most common statistically significant correlations between the performance of programs and the achievement of outcomes are BICA's ability to meet funds internally and to fund and report illegal, environmentally harmful activities (Table 1.1). Thus, the contention that there is a relationship between program success and the attainment of broad organizational goals is supported (Hypothesis 3).²

²It should be noted, however, evidence exists to reject the null hypothesis that each of the observed relationships between outputs and outcomes is uncorrelated as none of the alternative hypotheses of the existence of a response between each of BICA's outputs and outcomes.

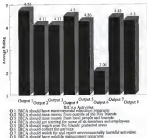


Figure 3-3: Mean Rating of the Appropriateness of EBCA's Outputs

Table 3.3: Tests of Hypothesis 3 (paired quality information with economic)

Outputs/Outcomes	OC-1	OC-2	OC-3	OC-4	OC-5
(O-1) BCCA environmental education program kept kids motivated	-				
(O-2) BCCA has been able to communicate their message of the Bay Islands					
(O-3) BCCA has been able to raise money from local people and tourism		++	++	++	
(O-4) BCCA has been able to get training for some of its members and employees					
(O-5) BCCA has been able to watch over the islands/ protected areas	+				
(O-6) BCCA collects the garbage					
(O-7) BCCA monitors the reef and reports illegal environmentally harmful activities	+			++	++
(O-8) BCCA has wildlife management program		++			
Key to Dependent Variables: (OC-1) BCCA monitors and manages the fragile ecosystems of the Bay Islands; (OC-2) BCCA promotes sustainable development through education and management of the Bay Islands; (OC-3) BCCA conducts environmental awareness throughout the Bay Islands through educational and community involvement; (OC-4) BCCA conserves and restores the Islands' representative habitats and rare and endangered species; (OC-5) Overall BCCA has met their goals as well as it is able to meet them. Key to notations: "+"=not significant at 50% confidence, positive correlation; "++"=50%-75% confidence, positive correlation; "+"=50% confidence, negative correlation; "-"=50%-75% confidence, negative correlation.					

In order to evaluate whether the appropriateness of BCCA program as well as their quality can statistically explain in the evaluation of BCCA's desired outcome, an alternative model is specified. Hypothesis 4 tests whether the "unrestricted" model, containing information about both the appropriateness and quality of program is statistically superior to the "restricted" or nested model, containing only program quality information tested in Hypothesis 3 (Table 3.4-5).

Table 2.4 Tests of Hypotheses 4 (perceptual quality and appropriateness of relationships with stakeholders)

Dependent/Independent Variables	OC.1	OC.2	OC.3	OC.4	OC.5
(20-1) BCCA environmental education program has been useful.	++				
(20-1.1) BCCA should do environmental education programs.					
(20-2) BCCA has been able to raise money from outside of the Bay Islands.					
(20-2.1) BCCA should raise money from outside of the Bay Islands.					
(20-3) BCCA has been able to raise money from local people and tourists.			++		
(20-3.1) BCCA should raise money from local people and tourists.	++			+	
(20-4) BCCA has been able to get training for more office members and employees.					
(20-4.1) BCCA should get training for its members and employees.					
(20-5) BCCA has been able to work with the islands' protected areas.					
(20-5.1) BCCA should work with the islands' protected areas.					
(20-6) BCCA offers tea parties.		++			
(20-6.1) BCCA should offer tea parties.					
(20-7) BCCA watches the sea and reports illegal or environmentally harmful activities.				++	++
(20-7.1) BCCA should watch the sea and report illegal or environmentally harmful activities.		+			
(20-8) BCCA has wildlife management programs.		++			
(20-8.1) BCCA should have wildlife management programs.					

Key to Hypothesis Variables: (1) BCCA provides and manages the high occupancy of the Bay Islands; (2) BCCA provides sustainable development through the use of the management of the Bay Islands; (3) BCCA creates employment opportunities through the Bay Islands through individual and community involvement; (4) BCCA creates and restores the islands' environmental balance and use and manages the space; (5) Overall BCCA has not been good or bad as it is able to raise funds. Key statistics: "++" = is not significant at 95% confidence, positive correlation; "+++" = 95% confidence, positive correlation; "+" = 95% confidence, negative correlation; "-" = 95% confidence, negative correlation.

Table 5.6 illustrates the revealed relationships between the quality and appropriateness of BECA programs and the achievement of broader goals. A relatively strong relationship is revealed between the perception of the quality and choice of BECA programs and the perception of BECA's performance in providing sustainable economic development in the Bay Islands. The most common statistically significant correlation between the performance and the appropriateness of programs and the achievement of outcomes was BECA's ability to monitor and report illegal environmentally harmful activities. Overall, statistical evidence indicates the appropriateness of programs does not influence the ability of BECA to reach its desired outcomes (panel objectives) (Hypothesis 4).¹²

However, an explanation for these results may be forwarded. If BECA chooses its programs appropriately, then variability associated with the achievement of outcomes (as with the effective success of well-designed programs). Recall that most responses to the appropriateness of programs were all higher than 4 (if except for the coral-reef waste management program) (Figure 5.5). Thus appropriateness of program choice may be important, but BECA's overvalued decision reduces the predictive power of this variable.

Environmental Policy Impacts: Examining BECA's Structural and Behavioral Features

Features of BECA's production process may influence its ability to implement its programs and achieve its broader objectives. Production processes are behavioral, managerial or structural features of BECA which potentially influence its ability to convert inputs into outputs. Specifically, BECA's structural characteristics may be related to the manner of its inputs (Hypothesis 5) and the achievement of its outcomes (Hypothesis 6). Analogously, BECA's behavioral features may be

¹²In statistical terms, insufficient evidence was provided to reject the null hypothesis that the eight estimated parameter values for the appropriateness of BECA programs were collectively equal to zero for individual outcomes at traditional levels.

related to the content of the message (Hypotheses 1) and the relevance of its content (Hypothesis 2). Hypotheses 3 and 4 are derived from isolated economic theory of negotiations. Hypotheses 5 and 6 are derived from the conception of BECA as a Communication Flow (Figure 1.4).

Members are asked to respond to ten statements associated with the BECA's behavior and eight statements associated with the BECA's structure. While some arguments could be made with confidence, the behavioral features addressed tend to be more cultural looking and the structural features tend to be more social looking from BECA's perspective. BECA's structural features that were evaluated spontaneously include local power (the BECA's size (Feature 1), degree of contact between members (Feature 2), degree and rate of member participation (Features 3 and 4), degree of consensus in decision making (Feature 5), consensus from the membership to the leadership (Feature 6), leader (Feature 7), and the local influence of individual members (Feature 8). Members' opinions of the structural features of BECA which may influence its ability to implement its programs are shown in Figure 2.7.

Decision-making within BECA is dominated by a few individuals and members of the local of diaspora. Leaders are seen as relatively influential individuals, particularly in Boston. Many members of BECA share common interests related. Participation by the majority of BECA members is generally limited. However, participation is higher in Ohio than in other Boston or Queens. Participation is relatively unorganized, but members are of the opinion that they don't know what they might do to help out. Communication is informal and generally thought to be open within the membership. Funding is thought to be in some supply and to sustain BECA's effectiveness. Generally, BECA is well-organized, but a small, informal and rather informal in managing decision making and information flow. Members feel that information flows well from the membership to the decision-makers, but relatively poorly in the reverse direction. Members feel that BECA's leaders are more powerful or influential locally than BECA itself is.

Structural Features

- (1) Size
- (2) Composition among members
- (3) Member participation
- (4) Ease of participation
- (5) Consistency of decision-making
- (6) Access to information flows
- (7) Access to resources
- (8) Local influence of leadership

Behavioral Features

- (1) Internal conflict resolution
- (2) External conflict resolution
- (3) Skills and abilities of group
- (4) Top-down communication
- (5) Local influence of outsiders
- (6) Local membership
- (7) Local support/participation
- (8) Horizontal linkage
- (9) Vertical linkage
- (10) Power and Corruption

**Institutional Features**

- (1) Government policies/voluntary organizations
- (2) Government attitudes/NGO's activities
- (3) Local propensity to form voluntary associations
- (4) Degree of local environmental awareness
- (5) Need for local environmental awareness
- (6) Degree of awareness of outsiders among members
- (7) Degree of local support for IR's
- (8) Degree of local initial and existing integration
- (9) Degree of interdependency among Bay Islanders on natural resources
- (10) Degree of perceived interdependency of Bay Islanders

Figure 5.6 Illustration of Interrelated Productive Process, Output, Outcomes and Institutional Relationships

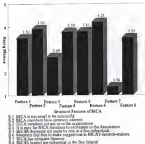


Figure 5.7: Members' Rating of Structural Features of BICA

Some of the modelled relationships between BCCA's structural features and its outputs and outcomes are illustrated in Tables 3-5 and 5-6, respectively. The most consistently significant variable across programs at the stage of member participation in BCCA programs. Currently, the availability of financial capital and ease of participation in BCCA are negatively correlated with BCCA's monitoring and enforcement activities. This result may be related to an observed relatively low opinion of the Government on its high level of funding and high level business participation.

Table 3-3 Tests of Hypotheses 5 (structural features) relationship with output 5

Structural Feature/Output	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
(Q1) BCCA is successful in what the Bay Islands wants to do								
(Q2) BCCA monitors local customs activities								
(Q3) BCCA monitors activities in the regulations	+			++	++		++	++
(Q4) Is a easy for members to participate in BCCA if they want to	-		++				++	
(Q5) BCCA's business programs by more a few individuals								
(Q6) Members feel free to make suggestions to BCCA								
(Q7) BCCA has a lot of money to work with				++			+	
(Q8) The leaders of BCCA are powerful people in the Bay Islands								

Key to Dependent Variables: (Q1) BCCA's environmental education programs have been successful; (Q2) BCCA has been able to raise money from outside of the Bay Islands; (Q3) BCCA has been able to raise money from local people and tourism; (Q4) BCCA has been able to get funding for some of its members and employees; (Q5) BCCA has been able to reach over the islands' political areas; (Q6) BCCA enforces the statutes; (Q7) BCCA monitors its and reports illegal environmental harmful activities; (Q8) BCCA has reliable management programs. Key to notation: "+" = plus sign/related at 10% confidence, positive correlation; "++" = 5% confidence, positive correlation; "-" = minus sign/related at 10% confidence, negative correlation; "--" = 5% confidence, negative correlation.

In addition, five of eight measured relationships between structural features of BICAs and the success of its programs are statistically significant at statistical levels. A particularly strong relationship is revealed between BICA's ability to attract training for its members and employees and the evaluation of its ability to successfully implement its programs (Table 1-2). As a result of these mixed results, it is surprising to find general support behind the notion that BICA's structural features are related to the success of its programs (Hypothesis 1).²

Table 1-2: Tests of Hypothesis 1: Structural features' relationships with intended outcomes

Structural Features/Intended Outcome	OC-1	OC-2	OC-3	OC-4	OC-5
(S-1) BICA must exist to do what the Bay Islands needs in life.					
(S-2) BICA members have various interests.			++		
(S-3) BICA members are active in the organization.	+	++	+	++	++
(S-4) It is easy for members to participate in BICA if they want to.					
(S-5) BICA's decisions are made by one or a few individuals.				+	
(S-6) Members find it is to make suggestions to BICA.					
(S-7) BICA has a lot of money to work with.					++
(S-8) The leaders of BICA are powerful people in the Bay Islands.			+		
<p>Key to Dependent Variables: (OC-1) BICA generates and manages the financial resources of the Bay Islands; (OC-2) BICA promotes sustainable development through the use and management of the Bay Islands; (OC-3) BICA creates environmental awareness throughout the Bay Islands through education and community involvement; (OC-4) BICA resources and restores the Islands' representative habitats and open and unexplored spaces; (OC-5) Overall BICA has met their goals as well as is able to meet them. Key to Notation: "++" = + test significant at 95% confidence, positive correlation; "+" = 10% 95% confidence, positive correlation; "0" = 95% confidence, negative correlation; "--" = 95% confidence, negative correlation.</p>					

² In statistical terms, there is insufficient evidence to definitively reject the null hypothesis that structural features are uncorrelated with outputs in favor of the alternative hypothesis that they are correlated across all programs.

To the contrary, the strongest relationship between structural features of BECA and the confidence of the achievement of outcomes is, generally, quite strong. Structural features demonstrate sufficient evidence in favor of the existence of a hypothesis for five of the five estimated relationships (Hypothesis 1)² In particular, existing structural relationship is revealed between the perception of BECA's structural features and the achievement of BECA's intent of creating environmental awareness in the Bay Islands. Again, the most consistently significant variable across outcomes is the degree of member participation in BECA programs (Table 3.1).

Quantitatively measured behavioral features of BECA include how parents for informal and external-school teachers (Features 1 & 2), competence of BECA personnel (Feature 3), local youth involvement (Feature 4), community involvement (Feature 5), internal communication (Feature 6), local political influence (Feature 7), horizontal coordination (Feature 8), vertical coordination (Feature 9), and competence of teachers (Feature 10). Identifying operations of the behavioral features of BECA which may influence the ability to implement its programs are shown in Figure 3.2.

Behaviorally, BECA seems to have been most successful at developing productive relationships both within and outside of the Bay Islands. BECA is viewed as being well connected with international donor organizations and consultants. Members also cultivate productive relationships with local governmental agencies and the schools. Several of BECA's activities have involved school-aged children or have been implemented in partnership with local governmental support. BECA members are less positive with respect to BECA's communication with other Bay Islanders and its involvement of the community in BECA, in general. Members indicate that BECA needs to provide more information about its activities to both members and to the rest of the Bay Islanders. Further, members do not feel that BECA is particularly influential in the Bay Islands.

² Statistically speaking, evidence is presented to reject the null hypothesis of that structural variables do not influence significantly youth response performance as listed in the alternative hypothesis that they are measured across outcomes.

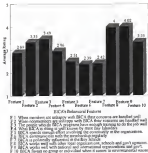


Figure 3.4: Member Rating of BIC's Behavioral Features

Table 3.3 presents findings of the hypothesized relationships between HCCA's behavioral features and the support (Hypothesis 1). All of the measured behavioral variables were strong predictors of HCCA's ability to obtain training for its members and employees and to manage the island's protected areas. The most consistently occurring statistically significant predictor of performance across programs was the perceived level of competence or leadership on HCCA's part (Table 3.3). On the question of corrupt behavior as the outcome by HCCA, the membership as control on corrupt, but rather limited. Whereas the HCCA significantly were highly on behavior that even HCCA's political influence on the Bay Islands institutional and external socialized institutions are also strong behavioral predictors of support performance.

Particularly strong relationships were revealed between the perception of HCCA's behavioral features and the perception of the ability of HCCA to obtain training for its members and to monitor the Bay Islands' protected areas. No behavioral variables are shown to be significantly related to the measured implementation of environmental education programs, or other external or internal food saving activities (Table 3.3). In general, these models of the hypothesized relationship between outputs and behavioral features of HCCA proved robust results. Overall, there is evidence of the existence of a negative relationship between behavioral features and five of the eight programs or activities.¹⁷ Thus, there is some support for the contention that behavioral features of HCCA are predictors of the success of its programs (Hypothesis 1).

However, there is no evidence to support the proposal that behavioral features of HCCA enhance the achievement of its broad outcomes (Hypothesis 1).¹⁸ No behavioral variables found to be statistically significant correlates with outcomes and there is no evidence of the existence of a

¹⁷ In statistical terms, evidence exists in favor of rejecting the null hypothesis of Hypothesis 2 that behavioral features do not correlate significantly with the achievement of the achievement of outputs.

¹⁸ In statistical terms, insufficient evidence is given to reject the null hypothesis that behavioral features do not correlate significantly with the achievement of the achievement of outcomes.

equivalent for any of the modified behavior outcome relationships. Thus, it may reasonably be inferred that BECA's behavior effects on overall outcomes through its program exist not directly by its behavior.

Table 2.7 Tests of Hypotheses 7 (external behavioral factors relationships with program)

Behavioral Factor/Output	H1	H2	H3	H4	H5	H6	DT	DS
(1) BECA receives a majority vote by the community on funding bill				—	NS	+		
(2) BECA receives a majority vote by BECA's state members on funding bill				++	—	—		+
(3) The people who do BECA program have had enough training to do the job well				—	NS	+	+	
(4) BECA is making a sufficient impact on the islands				++	—			
(5) BECA spends enough time and effort protecting the community on the program				—	NS			
(6) BECA communicates with the media frequently				NS	++			
(7) BECA's reputation, perceived as that they should not act hastily				++	++	+		+
(8) BECA is associated with educational opportunities already utilized government officials				++	—	+		
(9) BECA's reputation, perceived that international organizations will be successful government				++	++			
(10) BECA's reputation, perceived that international organizations will be successful government				++	++	++	+	

Key to Dependent Variables: (1) BECA's environmental education program have been successful; (2) BECA has been able to raise money from outside of the Bay Islands; (3) BECA has been able to raise money from local people and tourists; (4) BECA has been able to get training for some islanders and employees; (5) BECA has been able to make over the islands' protected areas; (6) BECA reflects the people; (7) BECA's reputation for and against developmentally harmful activities; (8) BECA has sufficient management program. Key to results: "++" means significant at 95% confidence, positive correlation; "++—" means significant at 95% confidence, negative correlation; "—" means not data, negative correlation; "—" means not data, negative correlation.

Environmental Relationships Between Institutional Features of the Bay Islands and BICA's Outputs

A relationship between features of the institutional context of the Bay Islands and BICA's ability to successfully implement its programs and create its formal outcomes are proposed.

Hypothesis 1-8. H2, respectively. Many of the salient features of the Bay Islands which influence BICA's informal performance in the Bay Islands are not amenable to quantitative evaluation.

However, 14 contextual features of the Bay Islands are analyzed through qualitative responses derived from the formal survey. Identified contextual variables of the Bay Islands that potentially influence the success of BICA are reported and listed in Figure 1-9.

Figure 1-9 provides the mean response of BICA members to the measured contextual variables. On average, BICA members are inclined to negative on whether Bay Islanders understand the environmental effects of the activities going on around them. Members indicate that forest program has been made through BICA program. However, they feel very strongly that there is a need for Islanders to understand the environmental aspect of current programs. BICA members rate natural and economic interdependence and cooperation as neutral to negative on average. In general responses associated to positive regarding the government's role, but rather limited. BICA members do not feel that BICA has formal community support for its ideas and programs (Figure 1-10).

In regression analysis, no statistically significant relationships between these features of the Bay Islands and the achievement of BICA's outputs are revealed (see table presented). Thus, there is no support for the proposed relationship between the Bay Islands' institutional features and the success of BICA's programs (Hypothesis 1)¹²

¹² In statistical terms, no sufficient evidence is found to reject the null hypothesis that measured features of the Bay Islands do not correlate significantly with the achievement of BICA's outputs.

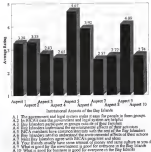


Figure 2.17: Islanders' Rating of Institutional Aspects of the Bay Islands

Table 3 it reports the revealed relationships between institutional features and BICA's ability to reach its broader objectives (Hypotheses H₂ on the other hand).

Table 3.1. *Test of Hypothesis H (institutional features/ relationship with revealed outcomes)*

Institutional features/Revealed Outcomes	OC 1	OC 2	OC 3	OC 4	OC 5
(A-1) The government and legal system make it easy for interested people to form independent groups.			++		
(A-2) If the BICA's want, the government and legal system are helpful to the organisations.					
(A-3) The Islanders participate in groups outside of their families.	+				
(A-4) The Islanders understood the environmental effects of the things that are done in the Islands.			++	+	
(A-5) The Islanders want to understand the environmental effects of the things that are done in the Islands.		++			
(A-6) BICA members have common interests with the rest of the residents of the Bay Islands.	++		+		
(A-7) Most of the Islanders agree with BICA's programs and ideas.			++		
(A-8) Your friends usually have about the same amount of money and the same cultural background as you do.					++
(A-9) What is good for the environment is good for everyone in the Bay Islands.			++		
(A-10) What is good for business is good for everyone in the Bay Islands.	++				
Key to Dependent Variables: (OC 1) BICA protects and manages the fragile ecosystems of the Bay Islands; (OC 2) BICA promotes sustained development through the tourism and management of the Bay Islands; (OC 3) BICA promotes environmental awareness throughout the Bay Islands through individual and community involvement; (OC 4) BICA monitors and protects the Islands' representative habitats and rare and endangered species; (OC 5) Overall BICA has met their goals as well as it is able to meet them. Key to scores: "++" = statistically significant at 95% confidence, positive correlation; "++" = 10% confidence, positive correlation; "+" = 10% confidence, negative correlation; "-" = 10% confidence, negative correlation.					

While BICA members feel that they have common interests, they really disagree that most Bay Islanders agree with BICA's programs and ideas. The statement of the degree of trust based

support is negatively correlated with reduced environmental awareness in the islands. However, members have the experience of local community support and increased environmental understanding to meeting BCCA's objectives. A feasible explanation for these counter-intuitive results may be derived from the motivation for people to volunteer their time and effort to local organisations. An attitude of "do not expect the world" or "if my don't do it, nobody will" might reflect the members' intrinsic values as related with the stated goal. A voluntary organisation results from uncoordinated demand for goods and services not provided by existing structures for production activities. Thus, a respondent rating organisational performance highly and community support for lower is understandable. The following statement is typical: "Yes, I strongly disagree with that statement: I think small groups of motivated people can do great things without either money or local support" (BCCA member during oral interview).

Environmental understanding is positively correlated with the development of environmental awareness in the islands. The intensity of environmental understanding is positively related to the promotion of sustainable economic development by BCCA in the Bay Islands. Community members' satisfaction with the environment is positively related to the satisfaction. Monitoring of socio-economic development is positively related to the overall assessment of the achievement of BCCA's broad goals. Economic interdependency is positively correlated with BCCA's ability to protect and manage the fragile ecosystems of the Bay Islands. The role of government and legal system in facilitating the facilitation of volunteer associations is negatively correlated with only one outcome (Table 1-8). In general, empirical evidence is mixed to support the contention that a relationship exists between the institutional features of the Bay Islands and the achievement of BCCA's intended outcomes (Hypothesis 1a).¹²

¹² In statistical terms, multivariate analysis was conducted to reject the null hypothesis that no relationship exist between features of the Bay Islands and the achievement of BCCA's intended outcomes.

Final Summary of the Perceived Performance Features of BICA

Using a conceptual model of a Communication Organization and analytical perspectives of a Communication First, examining all inputs, throughputs or production processes, outputs and intended outcomes, survey responses are analyzed to reveal potential relationships among these features. Hypotheses are formulated and tested regarding the relationships between inputs and outputs, inputs and outcomes, outputs and outcomes, between structural and behavioral features of BICA, and its outputs and outcomes, and between the institutional features of the Bay Islands and BICA's outputs and outcomes.

BICA harnesses human, financial, physical and natural capital to implement its programs. The programs are undertaken such that BICA's overall objectives might be achieved. Through refining through iterations with a variety of teams, BICA's structure, behavior and programs adaptably direct one largely under its direct control. However, the inputs available to BICA and the realization of its broader objectives are influenced by a greater or lesser degree by factors not of the control of the Association.

Members are generally positive about BICA. One survey revealed that on average members believe that BICA has been successful in meeting its five broad objectives and its eight identified programs. By and large, respondents feel that BICA has been successful in choosing appropriate programs and in implementing them well. From among BICA's intended outcomes, the achievement of a representative most commonly provided as evidence to BICA is provision of sustainable economic development and the creation of employment opportunities in the Bay Islands. Potentially, it may be inferred that BICA members most closely associate outcomes with its performance with regard to these two goals. From among BICA's activities, the most commonly-perceived statistically significant correlates with performance are the provision of self-paced learning, training, external fund

among activities, and the detection and reporting of illegal or economically harmful activities. Potentially, it may be inferred that these programs are most successful when closely associated with the success of HCCs from the perspective of its members.

From among HCC's managerial characteristics, the most consistently significant behavioral features in the task of detection or reporting on HCCs. The most consistently significant structural features of HCCs are member participation in programs and the degree of homogeneity of interest among members. The development of vertical and horizontal networks are also shown to be consistent conditions with success. Potentially, it may be inferred that these aspects of HCC's structure and behavior are perceived by members as pivotal in the implementation of HCC's programs and the realization of its overall goals.

CHAPTER 4 DEPLETION AND GRADUATION OF THE CODE STUDY

Introduction

A *system of observations* will serve to organize the information revealed about the performance features of HCA throughout the study. These observations are based upon aspects of the research methodology and are analyzed in light of the research results discussed in Chapter 5. This chapter addresses two central themes: (1) the strengths, weaknesses and shortcomings of the adopted research design, and (2) the extent and limitations facing HCA in its activities on the Bay Islands.

Implications and Assumptions of the Adopted Research Methodology

Assumptions are necessary to all research methodologies. The study employed an adopted ethnographic survey research design. Like all survey approaches, this research assumes that respondents can and will accurately record their responses. It assumes that the survey can be designed in order to facilitate the evaluation of these systems. It assumes that respondents have a degree of familiarity with the subject matter of the survey. The detailed survey literature suggests the recommendations of the survey to collect local language and needs as a benefit to the effectiveness of the adopted methodology.

The survey adapts the postulated code with a single "no opinion" option. The attempt was made to determine the code to know whether the "between" between a response of "strongly agree" and "agree" was the same as between "disagree" and "strongly disagree." It should, then, be

explained that this is an indirect offering of responses. In addition, it was assumed that such responses had an associated probability of being chosen. Consequently, the "modified agreement/disagreement" responses potentially bring the respondent into question.

Data collected in this study, or at any rate, what are subject to the construction of bias, that may be influenced by what the researcher or the respondent (interviewed) have previously introduced by the researcher into the population that appears through the research interview process. However, in employing an oral survey format, all information is ultimately filtered through the perceptions and attitudes of the researcher. The need to translate "yes" and "definitely" responses as "agree" and "strongly agree" as a number of scenarios may have introduced bias in the data. Differences in use of language, background context may have influenced the quality of collected responses.

Although an attempt was made to make the intent of the research clear, some respondents may have perceived that the study was an evaluation of EICA or that future findings hinged upon the results of this study. Due to the small population of the Bay Islands, the observed propensity for storytelling and the not pointed character of typical responses, respondents may not have been conscious of the confidentiality of their responses. Therefore, respondents may have been biased toward providing a positive image of EICA or toward providing information thought to be desired by the researcher.

Finally, Bay Islanders may not be accustomed to providing their opinions in response to surveys. For example, previous studies of respondents' views responses to survey statements noted that Hondurans tend to respond significantly more highly than non-Hondurans (21% versus 16% higher).¹ Women respond more highly than men (21% versus 16% higher) (1 know) and Spanish speakers more highly than English speakers (21% versus 16% higher).² It is difficult to explain why some respondents

¹ See Appendix F for detailed information.

differ along nationality, gender and language dimensions. However, several potential explanations arise. Non-Basques may have less experience with NGOs and may have lower expectations for their performance. Non-Basque members, including Americans, Australians, Canadians, Czechs/Slovaks and Russians, may have experience with NGOs functioning within a North American or European institutional context. Therefore, they may have expectations for performance which are unrealistic within the context of the Bay Islands. Non-Basques or English speakers may be more accustomed to expressing critical opinions or may have been more confident of the confidentiality of their responses. They may have less awareness or cultural predisposition to attempts to give the "correct direction" responses. Spanish speakers and Basques may not have given credible responses to the interviewers, a cultural outsider. While English-speaking (nationally) and of Northern European descent.

In the analysis of explicit negotiation, attention must be paid to whether policy and decision-making are driven by institutions or by the board of directors. However, even when decision-making is institutional under board of directors, it may be that institutions choose not to participate only so long as policies are in line with their desires. Due to the proximity of BICA's employees to BICA's programs and the small size of the experiments and of the Bay Islands this study assumes that BICA is institutionally overwhelming others. It is assumed that if members did not feel that they had influence over BICA policy when they were in disagreement, then they would choose to contribute to the Association. Survey results support this assumption. Results indicate that members feel that information flows relatively freely from the membership to decision-makers. They are less supportive of consultation in the executive decision, however. While survey information was collected regarding membership in BICA's board of directors, individual survey responses were given equal weight in the analysis. Given sufficient observations, an alternative would have been to analyze board of directors responses or decisions from the membership or large.

It is argued that not the profit volume-based organizations can be meaningfully analyzed within an adapted framework of the economic organization. A framework is required in which the IBCA is comprised of available inputs, throughput or managerial processes, outputs, and intended outcomes. The risk of developing a false sense of the strong relationship between an organization and its institutional environment and/or the organization itself is to reinforce these relationships. The direction and type of hypothetical relationships between here and beyond and the analysis only provides a map that of the organization within. That said, this study provides the basis for a more robust analysis of IBCA's evolution. The proposed structure does require information such that complex phenomena may be more easily understood. The approach, being largely systematic, adds an additional dimension to the literature on local NGOs and, potentially, provides the basis of a tool for future use by other NGOs and their donors.

Local organizations are, by nature, small. As a result, a traditional case study approach, supported by qualitative analysis can easily encounter difficulties with degrees of freedom. In this case, potential insights across the borders of IBCA, by gender, principal language and nationality could only be analyzed using quantitative methods. More observations would have allowed for the introduction of these features in parametric analysis via binary variables. The research design might have been changed in a number of ways to augment the number of observations and narrow the production process of the qualitative results. An understanding of IBCA may have been enhanced either through the inclusion of further value NGOs located in the Bay Islands (APRODES and NABEP), a comparison of the Honduran north coast NGOs involved in PUEBLOS (Indigenous Ecological Network for Sustainable Development) (e.g., PUEBLOS, PUEBA, PUEBAPUEB). Alternatively, additional production points may have been found by changing the boundary conditions of the analysis to include various youth initiatives, national initiatives, and/or a sample of local communities.

Observed Economic Impacts on Resident Island Community Livelihoods

A survey of business of the natural resource clusters at the Bay Islands, in consultation with the authorities of the Honduran government, provides evidence for generally sustained cooperative natural resource management arrangements (BICA). For example, within the development of the tourism industry and the associated influence of foreign tourists and enterprise developers on the Bay Islands economy, it is unlikely that BICA would have formed. If BICA had formed, a role in the Bay Islands would be distinctly different. Several observations serve to illustrate the point.

Survey results indicate that BICA members had noted strongly that what is good for the natural environment is good for everyone. Everyone is dependent upon healthy land and sea. However, they are not so concerned that what is good for business is good for everyone, even though all business is based on healthy land and sea. Tourism, fishing and their associated activities are the only sources of income in the islands. These differences are because of people's perceptions of time. People are environmental stewards of the Bay Islands as to over a long period of time. They see the business interests of some individuals to be over a much shorter period of time. In particular about people who are not Bay Islanders or have somewhere else to go are seen as having business interests that are not as long-term as longer-term environmental interests of the majority of Bay Islanders.

Bay Islanders are interested in protecting their natural resources as the reason that these resources provide them either financial benefits (e.g., tourism, fish, or real estate), or at least benefits that are good substitutes for financial benefits (e.g., drink water, more access to fish to eat). In order to explain many of the economic benefits, particularly from the reef, some access to these resources generated by the State or will have to be granted. Economic benefits from the Bay Islands' natural resources can be consumption or nonconsumption.

Management of a protected area has better value the ECU definition of a park than a reserve. ECUAs during, involving, taking and bird watching are essentially not consumption income-generating uses of natural resources. In practice, they are income sinks and their depletion uses of the reserves. Even the best management-consumptive tourism activities are subjective and impact the nature flora and fauna in some adverse way. Fordego indicates that 60 percent of deaths in the Florida Keys during the summer of 1989 include harmful interactions per single take dive (Belleville 1990). The intense process of taking dive masters can increase the tourist and disturbance crowding dives. Therefore, diving is better seen as a consumptive use of marine resources. Parks provide economic incentives and educational benefits for natural resource conservation. They act by its own activities in the environment and it adds with the protection biological resources.

However, in order for the many people of the islands to live, some consumptive use of the marine and terrestrial fauna must also be permitted. Aquaria, diving, coastal, fisheries, and fish are traditional and principal sources of protein for many islanders. Debate between their businessmen and local people represents all aspects of access to marine resources. These include the boundaries of the Marine Reserve Park.

Consumptive use management proposals include a system opening certain portions of the reef for fishing for specific periods, equipment and catch regulations. A management goal is to allow representation of the market life on other portions of the reef and provide necessary sustenance for local people. Such proposals for consumptive and nonconsumptive use require management, education, monitoring and enforcement of appropriate measures can.

In addition, the Key Islands demonstrates a high degree of interdependence between terrestrial and marine ecosystems. Thus, development of tourism infrastructure and recreation facilities on land influences the quality of the marine resources. Therefore, managing the reef without attention to other

inputs of resources are a clear likelihood sufficient. In economic terms, attempts at single-sector management amount to partial solutions to global problems. As a result, management proposals that integrate the management of both land and sea are preferable to a disjoint or non-coordinated system. Integrated resource management alternatives require negotiations at the sectoral level. Where government is unwilling to meeting these management objectives, opportunities for coordinated private solutions like BECA arise. However, resources for conservation clearly tend to be sub-optimal if the voluntary regulations introduced in natural resource issues. However, the skewed distribution of the benefits of economic development and the need of poor people to exploit the natural resource base for survival tends against it, notably, poor costs, local regulations. As a result, resource management and alternative job training are essential to the success of BECA.

BECA's efforts to manage the Reserve through the cooperation of official individuals have encountered significant difficulties in effectiveness. Some of these difficulties involve attracting a consistent and sufficient flow of financial resources for protecting the Reserve. Financial cost-sharing are provided. Charges of petty graft or waste management expenses were not actually clear what's best the reputation of the Reserve and its ability to raise funds. An example is, the purchase of fuel locally rather than buying at reduced rates from the mainland for boat movements. Potential fuel cost savings are as much as 30 percent. This is a small water waste over 70 percent of the operating budget can be spent on fuel.

In addition, difficulties involving a reasonable payment vehicle for supporting the marine resource stem from attempts to avoid resource users on the part of the (often expensive) owners of dive shops. Proposals for incentives, as a reasonable land community used resource generation spirit, are reluctantly accepted by dive shop owners. Argued on the basis of economic theory, those who derive the greatest benefit from an activity, have the greatest ability to pay and cover the majority of the costs should bear the greatest costs of management efforts. Improvements' practitioners are

based on the weak argument that a minimal per share fee (\$300–5) will price the Bay Islands out of the competitive share market. The fee represents 2.5–3 percent of the cost of a typical share in the Bay Islands. It represents a relatively modest proposal in the total travel costs incurred for travelers from the United States or Europe. The real reason for cheap owners' participation is that politicians want to capture business revenues and revenues come directly under their control.

One potential reason to modify this position is to charge a share fee at the airport upon entry to the Bay Islands even over 10 percent of all revenues to the Bay Islands come in this. Arguments against the proposal include: 1) if the government does the collection the business will never see the money; 2) practically everyone already lands in Cozumel, Quintana Roo, so all collected revenue will go to the Quintana Roo state and Quintana Roo has left out, and 3) tourists are already charged fees to leave the country. Added entry fee may be more for the benefit toward the Bay Islands. In addition, government officials are already attempting to levy an "official" fee upon entry. The most recent report is US\$ 2 per American or European land. Without the authority to monitor such behavior or fee the government agency, BICN was expected to conduct its revenue General difficulties.

Obstacles to the Political Integration of the Bay Islands Management Incorporation

Obstacles to the social, cultural, political and legal integration provide reasons for private cooperative island resources management organizations like BICN. Laws have been passed to manage the natural resources but toward the long-term objectives of BICN's members. However, corruption in government and government involvement often makes environmental law moot. Essentially, there is no law or crime that cannot be circumvented. Those who choose to be guided by the law have are misled with laws are usually. More often "persons" or permits can be purchased than a government official. When laws and regulations increase the opportunity for the paid and temporary government officials to collect money from people who want to benefit the land

There pushing hardest for the reinforcement of natural resources related legislation appear to be members of the local press and community clubs. Even the so-called "gringos" who most often appear to have the least of the legislation enforcement that does occur. The language barrier between developers and enforcement officials no longer exists with the local clubs. American and European developers, however, do not generally speak Spanish and government enforcement officials do not commonly speak English.

The negotiation of new legislation is not movement for those who have already arrived in the Bay Islands. Existing structures and operating businesses are "grandfathered in" under the new laws. There have not highly-increased for those who took up the undeveloped land prior through speculative purchase. Increasing the costs of development when all of the land has been purchased is an extremely effective way for the locally powerful to keep out unwanted competition in the tourism industry. It will allow them to keep the land from a strong local market when the speculative bubble bursts in the future.

As a result, a strong BECA now fits interests of the power class as long as it is interpreted enforcing environmental laws and increasing the costs of new development. If BECA takes on other educational or advisory roles or takes more action as an approach to economic development, BECA may no longer serve the interests of the state and be discarded at any real point. The strength of BECA's control/indirect to international NGOs and government donors may be proven in the transition's success. In particular, if BECA falls out of favor with the local clubs or politicians, international language may never be pushed BECA into its leadership.

Conflict between outside developers and local communities is clearly not new. Experience in Florida shows how external developers help to ruin a community. The case of the Bay Islands depicts that experience in the United States in the case lack of enforcement of laws and planning for development. Redefining and enforcement can be in place for local people to have say

choices of landscaping from the economic development that will come with it, without them on their islands. The problem is obvious: according to the vast majority of people quoted on this subject, "It's not that we don't like the hotel, what distinguishes us is the hotels that would maintain this identity in any place in the world that there is little or no reinforcement of the value" (three Okinawa personal communication). For example, two Japanese-born developers are among the most prominent and active members of the Bay Islands. They were quite active in the tourism boom in Belize and were present upon arrival in Belize. One major investment in Tingo, Florida for Grand Florida/State Street Coast, Middle Island of Florida, Tingo Dreams, (1994). He is one of the largest real estate developers in the Bay Islands and he used not few subsidiaries because, especially, provided Honduran citizenship for 200-300 (three Bay Islands personal communication).

In sum, the political legal economic and cultural systems within which BICs (or any other NGO in the Bay Islands) is operating and particularly tourism is in performance. However, the institutional context and economic base create a situation where it is questionable the BICs are really sustainable. As long as these conditions exist, there is reason for BICA to demand if a professional BICA has the potential to be more effective than the government because it does not appear to be able to overcome BICA members generally recognize that BICA needs reinforcement authority in order to be an effective governmental group. Moreover, local BICs responsible as if it and the ability to reduce the loss in the Marine Reserve. The more the government BICs because the more people distrust what is clear and the more management of corruption among national there are found. A quasi-governmental role for BICs is a legal institutional arrangement like Honduras puts forth it is very inefficient, indeed.

Finally, the social and economic state of the Bay Islands are closely related to the international tourism demand. As skilled entrepreneurs involved in the tourism industry they probably recognize the promotional potential and financial support available from wealthy

international conservation NGOs and well intentioned individuals. Natural resource conservation on the Bay Islands is in the economic interests of Bay Islanders involved in tourism, but it also provides an outlet for natural resource conservation demand for wealthy North American and European. Promoting "green" lodging on the Bay Islands through BICA allows local businesses to improve their market entry potential with other people's money. In economic theory terms, the economic demand for natural resource conservation on the Bay Islands is immediate and the potential local economic growth benefits are far more remote. This makes it expensive to subsidize Bay Islanders toward the attainment of their performance for conservation. In principle, there is little problem with that situation. However, when the degree of local reliance upon local resources is considered as ultimately influenced by the expression of immediate performance, additional complexities and short-termism arise.

Indicators of Changes of the Membership in BICA's Performance

BICA's available pool of active local members can be estimated from a highly diverse cultural, economic base. The profile of BICA's membership influences the Association's approach, program choice, emphasis and effectiveness. It has been established that there are financial and socio-cultural constraints for the formation of BICA and the profile of potential potential the Association might undertake. Survey results reveal whether the motivation for local membership in BICA stem primarily from their conservation or socio-economic motives are potentially at work.

Survey responses indicate that the mean age of adult resident BICA members is 41. The high school graduate is 67 and the low is 19. Forty percent (12 out of 30) of respondents are lifelong residents of the Bay Islands. The mean length of residence of non-native members is 12.16 years. The low reported education is 6.2 years and the high is 14 years. The most prevalent membership of BICA's membership is direct or indirect economic dependence upon the quality and quantity of resources derived from the local natural environment. Most members are local entrepreneurs and not so other

the success or failure, industry is more key. On average, BICA members are relatively well off in comparison to the general population. Only 38 percent (17/43) of respondents do not depend on the movement or the members of BICA for their financial well-being. Therefore, the potential influence across the community is limited. Thirty-two percent (14/43) of those who claim no influence. The balance (58 percent of the total) are either retired, housewives or government employees.

Expatriates play a dominant role in BICA. There are slightly more women than men in BICA. The influence of English is stronger than Spanish in BICA, although most print/print documents, meetings, and communications can be found in both languages. Other island languages (e.g., Catalan) cannot read. People of modest education or education are not, generally, members of the organization. They are either the intended targets of BICA programs. There are five members of Afro-Cuban descent. One member was identified as being Afro-Cuban descent. However, he went to first stop and small hotel. With modest occupations, the local social and power elite of the island are absent from the membership rolls. Some, but not a majority, of the individuals holding political office are members of BICA. While the majority of the islanders practice one religion or another, the participation or absence of any of the churches in BICA activities is minimal.

Members of the Big Islands are traditionally separated by ethnicity, history, traditions, and language. Native islanders are oriented toward family units. New immigrants from the mainland and from foreign countries are instrumental toward more formal relationships including community level organizations and institutions. Survey results indicate that 40 percent (16/43) of respondents are members of other local organizations outside of the islands. The potential for productive horizontal linkages is suggested by these responses. However, fewer than 30 percent (10/43) of respondents indicate membership in other national movement-oriented organizations at any level. All are expatriates.

The general education level of Bay Islanders is quite low and there is not a great deal of understanding of environmental issues. The education level of RICA members is observed to be much higher on average. The connection between the health of the land and of the sea and the implications of individual actions on broader social goals are not broadly understood among Bay Islanders. Clearly there are areas of great expertise in RICA members.

In sum, RICA's membership does not reflect the socio-economic, ethnic or cultural profile of the Bay Islands at large. On average RICA members are decidedly more middle class, educated, dependent upon the local tourism economy, foreign, English speaking, women, and younger in voluntary engagement than the general population. The distinction between the member profile of RICA and of the Bay Islands are observed to influence RICA's approach, program choice and success.

The great majority of RICA program efforts are oriented toward maintaining or enhancing an environment conducive to the promotion of marine tourism in the Bay Islands. Marine tourism efforts are in highly localized areas. Social waste collection occurs in isolated areas, and recreational areas. Recreational efforts become priorities when fresh water needs of the tourism industry become critical. Commercial fisheries feel that RICA is threatened by foreigner entering to the detriment of the tourism industry. This tends to encourage a viewpoint that natural resource conservation efforts are primarily for foreigners and only secondarily for Bay Islanders. Survey results indicate that RICA does not involve the community sufficiently as a program and does not enjoy significant broad community support. Long term effectiveness would require depend upon changing environmental practices of the majority of Bay Islanders, not only those who pursue eco-tourist work interests.

There is an observed propensity to subvert or avoid local initiatives to reach environmental goals of the organization. Low participation, dissimulation of potential gains, and community alienation make up a large proportion of RICA's efforts. The tendency toward centralization

influence could be the result of social and economic characteristics distinct between IBCA members and the majority of the islanders. Survey responses indicate that IBCA members are more performance oriented, measure commitment to be the primary motive in the Bay Islands. In North America and Europe regulations are a barrier and of potential resistance to accomplish the behavior of management responsibility. IBCA's separate influence may have fostered this approach.

Regulation and enforcement may provide effective short-term influence on environmental abuse. However, over the long-run, a preference for control over voluntary or incentive-based changes in behavior are less preferable usually and are more to undesirable policies state intervention, particularly in an inefficient enforcement environment. Regulation needs to be coupled with educational efforts to change majority behaviors over the long-run. Mutual environmental education activities have been inconsistent with the influence of education in the membership.

Although regulations promulgated in the Bay Islands, IBCA does not coordinate efforts with the local education. This approach may derive from corporate influence in the representative, U.S. and European environmental NGOs are decidedly smaller and consistent regulations are not observed in the island members. IBCA has had somewhat greater success acting in partnership in areas of governmental agencies. The membership of more locally prominent individuals and politicians may have fostered these relationships.

Finally, a common difficulty in small organizations is in distinguishing between the behavior of the leaders on behalf of the organization and the behavior of the organization itself. For example, several respondents indicate that they become members because IBCA can take a more radical stance than they could take on their own. It is clear however that, due to the social and economic status of the leaders, IBCA is able to behave in ways that members are not able to behave as individuals. The leadership of IBCA projects personality of leaders whereas others are often the voice of relatively powerful individuals. On the whole, IBCA members feel that its leaders are fairly

potential individuals and that potential leaders are more so necessary for BCCA initiatives. Flemishspeakers rate both of these factors statistically more highly than non-Flemishspeakers. Spanish speakers rate the necessity of power significantly more highly than English speakers. Their leadership may give BCCA the drive necessary to carry out its program.

However, being led by individuals with strong personalities does not always make it easy to be a member. If BCCA is viewed as an leadership-oriented, the leaders need to be conscious of their role as representatives. Personal conflicts and organizational conflicts can become enabled. Dispute resolution can not always be the best interests of the organization.

In view of the survey results presented in Chapter 3 it has been observed that leadership of the political context of the Bay Islands influences the necessary for power voluntary associations like BCCA. BCCA's formation, structure, behavior and performance are influenced by the socio-political and economic structures for forming BCCA. The strong distinction between the member profile of BCCA and of the Bay Islands in general influences BCCA's program choice, role and effectiveness. The final chapter provides recommendations for BCCA to enhance its effectiveness in light of the information provided in Chapters 3 and 4.

CHAPTER 1
POLICY IMPLICATIONS, RECOMMENDATIONS,
SUMMARY AND CONCLUSIONS

Executive Summary of the Approach

State-owned enterprises in their many forms are an important sector for the expansion of social values and for the management of natural resource stocks and flows. In the United States, they are an indispensable part of any discussion of sustainable economic development. "Based primarily on one of the primary factors contributing to the over-exploitation of natural resources (efforts to address conservation are unlikely to be successful over the long term unless they explicitly address the needs of the human populations that depend on those resources)" (Johnson, 1991, p. 2).

NGOs differ widely in scale of operations, membership, objectives, size, financing, budget, location and performance. A comprehensive inventory of NGOs has not yet been developed. "Theories of NGO behavior and performance are to be built through careful investigation and well defined evaluation of the several nonprofit sector." One of the great challenges for policy analysis is the design of organizational structures which can maintain local responsiveness and integrate it with improved regional to national organizations for design function, or otherwise emphasize the importance of local organizations for introducing needs and obtaining services" (Johnson and Turk, 1991, p. 24, as Evans and Upstaff, 1994, p. 85). Nonprofits and cooperatives (called NGOs, particularly at the local level, are the most common type of nonprofit organizations in use in a broad of prominence in the United States and other countries.

This work provides a deep understanding of one particular human organization: the Bay Islands Conservation Association (BICA). BICA served as a case study of a specific type of local, voluntary, self-governing organization. A theoretical interest question was engaged in natural resource management. Is an attempt to provide a deeper understanding of BICA, while maintaining the potential to draw more general conclusions, less methodologically questionable, if not, what is the methodological and philosophical content within which any descriptive arrangement for the management of environmental features? Secondly, given that BICA formed and persists, what are the features of the organization which enhance or impede its ability to meet its objectives? Based on these research questions, a conceptual and analytical scheme and empirical research methodology is designed to establish empirical information and to draw conclusions useful to BICA. The hypotheses are tested and evaluated in respect to information about BICA using this analytical frame and empirical methodology.

Statistical evidence suggests the existence that there exists a correlation relationship between BICA's organic methodological features and its ability to implement programs. BICA's programs are found to be correlated with the achievement of its broad objectives or intended outcomes. However, BICA's desired outcomes are not correlated with the choice of output strategy in the predicted relationship. Features of the methodological content are found to be significant predictors of the achievement of outcomes, but not the success of outputs.

Among the most interesting features of the approach adopted in this study is the reliance upon local knowledge and information rather than the systems of "expert analysis." The insights gained through compiling long-held knowledge are weighed against the analytical benefits of technical training and experience in adopting such an approach. Surveying the relationship makes it possible to more specific quantitatively-analytical information from within a case study approach. The hybrid approach reveals useful qualitative and quantitative information. The hybrid approach

allow for a summary of the survey effects to elaborate appropriate variables and potentially enhance the performance of modeling efforts through the inclusion of newly revealed variables. Such an approach is particularly useful in the face of incomplete and largely uncorrelated data. While the desirability of this process is uncertain, it is felt that a systematic and participatory approach of local assessment yields superior results to non-traditional approaches.

Issues of IECA's Performance Potential

In reference to the planning and goal setting variables listed in the literature, IECA was found to effectively utilize measures relatively limited or untested. Economic indicators and external and internal conflict management are associated with the evaluation of performance. IECA provides a broad array of measurement-oriented services to the fly islands. The services provided by IECA are well-aligned with governmental and non-governmental groups.

With respect to the organizational structural variables listed in the literature, IECA has many functions and is better suited to managing decision-making and information flows. IECA has created better vertical than horizontal linkages. The organization is economically homogeneous and relatively well off in comparison to the general population. It demonstrates slightly greater female than male participation. IECA is small and under-manned. IECA has demonstrated the ability to be flexible and to adapt to its changing needs and demands and has made some effort to plan for the future.

In terms of the performance variables cited in the literature, IECA directly provides health and education services. It indirectly provides educational access opportunities, nutritional benefits, and superior water supply with monitoring and distribution economy. It does not minimally influence income distribution, or social and gender discrimination. IECA does no more than

collaborate around its public services and the degree of government and community participation in environmental issues affecting life on the Bay Islands.

In terms of potential identified problems areas, BECA has environmental responses to its programs, related development, and infrastructure under duress. It most definitely suffers from disparate levels of participation among its membership. BECA has weakened institutional arrangements rather than systems of corruption and mispractices. The Association plays a leadership role for environmental issues on the Bay Islands. BECA is the only environmentally-oriented liaison between the Bay Islands and individuals, governmental and nongovernmental groups at any level. There is an official government staff person connected to BECA members. However, several members are local and national level elected officials and BECA is expected to play a quasi-governmental role in the management of protected areas and the reporting of breaches of environmental legislation.

BECA, like virtually all local organizations concerned with natural resource management, makes some people unhappy. "Natural resource management" usually means restricting natural resources that there might be greater future use. People don't like being told what they can and can't do. They can be particularly resistant if they have enjoyed a relatively free reign like on the Bay Islands. Many Islanders feel that no management of individuals seeking to do what they have done for generations is legitimate. Hence, controls tend to have greater resistance for those seeking after them. A few have the view that issues of the status and flow of resources should be managed for the long-term benefit of all Bay Islanders. Naturally here that should be done in a non-political and not military intervention.

Features of the International Context and Natural Resource Base of the Bay Islands

Aspects of the natural resource of the Bay Islands influence a number of features of BICA. In terms of environmental variables found in the literature, the topography of the Bay Islands is quite varied and its resources are fragile, tropical, interdependent, rich, diverse and abundant. First of the shared resources from comprehensive flows and flows of the islands themselves, the surrounding reefs, and the marine spaces that lay off of the islands either permanently or seasonally. Corals, both tropical and open, cover considerable to great and approaching areas. While the availability of information regarding these features of the resource base is increasing, the number of people living across the information and grasping the gravity of the resource appears to be low.

Features of the Bay Islands' economy have an impact on BICA as well. The economy is undifferentiated. Most of all economic activity in the formal and informal sectors is based on the flow of services from the natural resource base. Bay Islanders are highly interdependent economically and in terms of the shared flows of benefits from the resource base. The temporal and spatial variability of benefits from the shared resource base is high when considering the able and flow of tourism taking and the tourism industry in the islands. In many cases the current conditions of the resource base could great. However it appears to be ground for disaster. Currently, it is a transition from tropical paradise to a tourist environment and over-developed land of "group tour shows" and "all inclusive." The market conditions for products of marine industries and sea-tourism are currently very good, but somewhat unpredictable. Physical infrastructure in the Bay Islands is increasing at a high rate.

Social features of the Bay Islands may potentially influence aspects of BICA. The general standard of living is quite low by developed country standards. Generally income and wealth follow a top-poor distribution with the great majority of the resources under control of a minority of

introduction A relatively small but increasing number of individuals maintain claims to resources of the Bay Islands. These are exclusively the offshore land descent/lineages in the Bay Islands. They have various economic interests. Primarily individuals in transit, they tend not to participate actively or support of these economic interests. The leaders of the Bay Islands are, largely, skilled and wealthy entrepreneurs. It does not appear that there is a great deal of popular or Communitarian values in the world view of local leaders. BCI's leaders are more broadly visionary and community oriented. However, they may not possess the same level of business interest/guard as the political elites of the islands' leaders.

The legal system and wilderness rights regimes governing natural gas may influence aspects of BCI's. There are rules in place for managing the natural resources, but some of them are outdated and they are vigorously enforced. Changes in the rules governing the use of the natural resources have an likely to make up the balance. It is unclear, however, how they might evolve and what impact these changes will have on the disposition of the rights/resources base. Thus far, there appears to be little or no ability to construct access to local resources from. Initiatives and open markets are the dominant mechanisms employed in almost leading indicators of resource use. The perception of legitimacy of natural and wilderness rights governing the use of natural resources and their control.

Cultural features of the Bay Islands may also influence aspects of BCI's. Traditional settlement patterns are coastal and near to deep ports with a few exceptions. New developments are required and tend to be more frequent. With coastal construction has some settlement in the interior. The Bay Islands are highly visually heterogeneous and enriched. Traditional gender roles are apparent in nature. Literacy levels are low by developed nations standards. Education of high school level is not as high as in some voluntary organizations, while those of standard secondary schools demonstrate a greater tendency to do so. Past strategies for resource use can be divided into two patterns. The vast

majority of Bay Islanders have lived on smaller, unincorporated “in-need-of” lands. Transfers provided by short- and long-term leases have motivated some Islanders and most expectant to define a viable accumulation of real property/development consistent with traditional patterns. Most Bay Islanders either do not have or do not perceive that there are reasonably attractive options to living in the Bay Islands. However, most, if not all, FICA members have the financial wherewithal to explore such options.

Implications and Recommendations

Based upon the reviewed survey results and observations, the potential policy implications of this translocation initiative at five levels: organizational, community, municipal governments, national government, and international donors or partners. The approach and boundary conditions defining this study focus the majority of the policy implications at the most local level. All policy implications and recommendations are direct with respect to how FICA might become more effective. However, some more general observations may provide insight at levels more removed from the particular issue.

Implications for FICA and the Communities of the Bay Islands

First and foremost, members of the Fund should provide information and a learning experience for FICA. Through their participation in the research process, FICA members should gain a better understanding of how they might enhance FICA’s ability to achieve its goals and objectives. Members should know what is working, what is not, what changes can be made to improve FICA’s effectiveness and what factors are compromising its effectiveness which members may not have any ability to change. Many features of the Bay Islands cannot be directly or even

effectively influenced through sustained efforts on the part of BICA. Moreover, there are a number of issues surrounding BICA's resources and behavior which could potentially improve BICA's effectiveness for both cost or effect. Here, three examples are raised to illustrate the types of actions that might be undertaken:

Improve marketing and promotion

BICA members identified the lack of consistent sources of funding as among their most pressing concerns for the Association. Dependence on external and internally-generated funding, specifically earmarked for particular programs has limited BICA's ability to address those concerns which its members feel are most pressing for the Bay Islands. A certain amount of discretionary funds would allow BICA to continue programs that are seen as important to meeting its objectives, but might not be able to attract funding for a period of time. A more systematic strategy for fund raising and promotion might alleviate some of these concerns.

Thinking about the Association's sources of funding in terms of institutions or institutions of BICA's service could help to analyze the institutional issues and to provide appropriate information to those who are interested in its well-being. BICA attempts to attract financial, human and physical inputs and a supportive environment in which to implement its programs from at least five distinct institutional resource donors and non-donors (individually and collectively), non-resident individual donors, the Honduran government (municipal, departmental, and national), and international donor organizations. With the existing stock of capital under control of BICA and the flow of new capital from these institutions, BICA is able to implement its other programs in order to reach its broad objectives. Each of these institutions has distinct experiences, needs, and potential influence on the ability of BICA to achieve its objectives. Each, then, should be considered directly in the marketing and promotion of BICA to potential supporters.

Standard office procedures and time constraints

BICA's leaders also complain that they spend so much time writing grant proposals and accounting for funds that they have no time to do what the Association was founded to do. Survey responses indicated that members were not particularly active in BICA, implying that the availability of person-hours is constraining BICA's ability to perform. When the Power-Corps replacement comes, BICA will be well-stocked for personnel. Improved organizational culture BICA efforts could help to distribute the work load more evenly and, perhaps, make it possible for more volunteers to be put to use.

BICA, as a small organization, often encounters features of a small business. Particularly if BICA is planning to increase its size, some of these features could impede its effectiveness. Currently, information is often not written down or not recorded in a way that anyone except the providing individual can figure out. As a result, there are many repeated person-hours when attempting to decipher information or waiting for the person who understands the information to return. Lack of standardization makes it impossible for individuals outside the club to take any responsibility for reducing variation. This results in a lot of wasted time. The administrative manual in which memberships are recorded and used provides an example of how procedures could be adopted and standardized to BICA's benefit.

Sufficient human labor is required to do what BICA does. Workshops will come for sale in the office and are not presented by office staff. There is a high level of inefficiency through the BICA Executive office and BICA (this writer notes) the way should lower the office without leaving what the organizational structure and in the long term what BICA is doing about these concerns, nothing will be done to make a difference.

Annual financial statements have improved over the last few history of BICA. However, an overhead rate has not yet been determined a proposal for external funding. An effort to recruit the

number of hours expended in the administration of each project would help to determine the appropriate overhead rate based on the type of project. Office time that becomes billable time. That time local funding sources for ongoing programs. In addition, more accurate accounting of administrative costs will yield a better understanding of the actual input requirements for each type of program.

Update financial information

The development of efficient relationships with other NGOs, potential donors, and governmental agencies that enable and control the Bay Islands are seen as important to BICA's ability to reach its objectives. Efforts to improve these external and financial linkages as well as improving the formal board support of BICA may work to improve its effectiveness and the use of its assets/resources.

In an effort to stretch the capacity of BICA to reach its formal objectives, it could explore its financial connections. Other NGOs may have comparative advantage in financial promotion and systems management due to their relationships with external sources. Increased coordination could allow BICA to focus on those programs in which it is better suited. Further, churches are an important part of society on the islands. Providing and maintaining a formal form of support for economically vulnerable individuals is a basic objective of BICA. Therefore, it may be useful to work through the churches to get the message out. The churches may have this understanding because the staff rural cooperative members tend not to be church members. Many of these members have experience with developed country-based NGOs which take a decidedly secular stance.

Engagement for Government Agencies and International Partners

Among the observations derived from this study is a number of insights which governmental agencies might adopt to influence the ability of BICA or other voluntary organizations to achieve their objectives. Over time, the municipal, departmental and national governments may

influence some features of the institutional context which affect NGO performance. A legacy of governmental graft and corruption has influenced both the reputation of BECA as a quasi-governmental authority and governmental efforts to make and enforce environmental regulations (especially as enforcement infrastructure created from a colonial context). However, *corruption and inefficiency among which/where one cannot see the probable environmental impact of various types of development is also a clear need.* An improvement in the performance of governmental officials and agencies should result in an improvement in the ability of NGOs to perform.

The level of public services, particularly health and education is relatively low in the city of Kibaki and in Kisumu in general. Improvement in government performance with respect to general education and public health should directly influence the ability of BECA to make its local social objectives. Aside from the five categories of effective public/private partnerships described above, *governmentally-initiated programs in the natural and legal environment should enhance the ability of BECA and other NGOs to perform.*

Analyses reveal that another important to a number of topics, behavioral and structural features of BECA correlate with the evaluation of its performance. Managerial variables indicate that a lack of corruption, sufficient financing of programs, sufficient skills among those individuals implementing programs, and the development of vertical and horizontal linkages are among the most consistently correlated predictors of BECA's ability to perform. Given organizations concerned in developing relationships with BECA might look to these features in determining whether and how to start, join, or join a partnership. To the extent that other local financial and natural institutions engaged in natural resource-managing activities are related either to similar structural context to BECA, or management of these features may point to potential avenues for closer partnerships with them. The NGOs located in the north coast of Kisumu provide helpful examples.

Conclusions can only be derived with any confidence with respect to IBCAs. However, our empirical findings from similar virtual organizations are in context, resources, time, structure, and function, because finally it is the fit between which predicts performance in these VGOs will be the most robust found within IBCA. Only further research can measure that important hypothesis. In an environment where an ever increasing number of groups are a part of a landscape of available funds, identifying a consistent set of necessary conditions for success (not to say "silver bullet," however), if such a statement would prove highly valuable to meeting long-term objectives of sustainable development.

To conclude, a general theory of VGO behavior, or even of a specific subsector of the highly diverse nonprofit sector, is not forthcoming at this time. However, this research provides a flexible and useful approach to conceptualize and analyze VGOs. It contributes to the ongoing discussion attempting to better understand and enhance the ability of virtual organizations to meet their objectives such that a more comprehensive theory of VGO structure, resources, performance and performance might be developed in the future. It opens a new dialogue for many of the members of IBCA. It is hoped that this work has provided a glimpse of the platform from which more research into this exciting and interesting set of organizations for the responsible management of natural resources might be undertaken in the future.

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APPENDIX I
ENGLISH VERSION OF ACRONYMS FOUND IN TEXT

AG	Aggregates Organization
ATBODIB	Association for the Development of the Bay Islands
BICA	Bay Islands Conservation Association
CAID	Canadian Agency for International Development
CDC	Caribbean Conservation Corporation
CF	Conservation Fund
CO	Conservation Organization
CONSEFOR	Honduras Commission for Forestry Development
CONSUPLANE	National Economic Planning Board
EEI	Environmental Impact Statement
FAD	Fish Marketing Division
FADLTH	Food and Agriculture Organization of the United Nations
FPU	Florida State University
FUCIOWA	Caribbean Cultural Natural Parks and Life Communities Foundation
FUCON	Clare and Isabela Foundations
FUPHAPB	Four Islands National Park Foundation
GIS	Geographic Information Systems
GLC	Guayaquil Latin Club
IBEH	Honduras Environmental Protection Fund Project
IA	Interest Association
IAF	Inter-American Foundation
IND	Inter-American Development Bank
INT	Honduras Institute of Tourism
IMS	Institute for Marine Sciences
INPOF	(Honduras) Institute for Political Development
IOCN	International Office for the Conservation of Nature
ISA	Local Development Association
MAEFIA	Marine Bay Islands Professional Labor Association
NGO	Non-governmental Organization
NTV	News Corps Volunteer
PROLANSKE	Foundation for the Protection of Llaneros, Ponds, Inland Forest
QUANCO	Quasi-Non-governmental Organization
REDEN	Honduras Ecological Network for Sustainable Development
SECTUR	(Honduras) State Ministry of Culture and Tourism
SEDA	(Honduras) Secretary of the Environment
THE	The Nature Conservancy
TUED	Tropical Research and Development Inc.
UN	United Nations
UNDP	United Nations Development Programme
UNITAR	United Nations Institute for Training and Research
USCN	United Nations for the Conservation of Nature
USAID	United States Agency for International Development

APPENDIX 1
 CBAL SURVEY OF BCCA MEMBERSHIP AND
 FREQUENCY OF READABLE RESPONSE TO CLOSED FORM STATEMENTS

N = 125 potentially functional adult resident members

na = 9 unable to respond

n = 11 refused

q = 43 unable to locate/lost card

n = 14 and response

[Summary information described here is based upon oral responses only. Responses of "no opinion" were not included in the computation of means and standard deviations.

[Likert Scale: 1 = Strongly Agree, 4 = Agree, 3 = Neither Agree or Disagree, 2 = Disagree, 1 = Strongly Disagree, 0 = No stated opinion.

I. Objective Quantified Statements

	Fa	Fb	Fc	Fd	Fe	Ff	Mean	Standard Deviation
BCCA protects and manages the fragile ecosystems of the Bay Islands.	7	27	3	12	1	1	3.48	1.08
BCCA promotes sustainable economic development through the rules and self-management of the islands' natural resources.	1	31	2	10	4	3	3.47	.99
BCCA creates environmental programs throughout the Bay Islands through individual and community involvement.	20	18	1	3	0	1	6.28	.70
BCCA conserves and restores the islands' representative habitats and rare and endangered species.	3	15	1	18	1	3	3.28	1.13
Overall BCCA has met their goals as well as it is able to meet them.	8	11	1	6	3	3	3.72	1.66

II. Output-Oriented Statements

	Fa	Fb	Fc	Fd	Fe	Ff	Mean	Standard Deviation
BCCA's environmental education programs have been successful.	8	17	3	7	2	4	3.71	1.07
BCCA should do environmental education programs.	61	13	0	8	8	0	4.76	.41
BCCA has been able to recover money from tourists of the Bay Islands.	8	20	1	8	2	11	3.48	1.04
BCCA should raise money from tourists of the islands.	18	16	3	3	1	0	4.11	.43
BCCA has been able to recover money from local people and tourists.	7	14	3	3	0	0	3.88	.67

BICA should raise money from local people and tourism.	10	10	4	0	0	0	4.41	0.0
BICA has been able to get training for some of its members and employees.	0	10	0	0	1	0	3.03	90
BICA should get training for its members and employees.	11	20	0	1	0	0	4.30	40
BICA has been able to reach over the islands' poorest areas.	4	20	0	14	4	0	3.23	1.13
BICA should reach over the islands' poorest areas.	20	10	1	1	1	0	4.20	70
BICA collects the garbage.	4	10	0	0	10	1	3.07	0.50
BICA should collect the garbage.	4	0	1	20	20	0	3.04	0.50
BICA watches for and reports illegal environmentally harmful activities.	11	10	1	4	1	0	3.50	50
BICA should watch for and report illegal environmentally harmful activities.	20	21	0	1	1	0	4.43	80
BICA has wildlife management programs.	1	20	1	11	1	0	3.33	1.00
BICA should have wildlife management programs.	10	10	0	0	0	0	4.30	40
Overall BICA does what it has to do.	4	20	4	1	1	0	3.47	50
Overall BICA does what it should do.	0	20	2	10	1	0	3.47	1.00
Overall BICA does what the Bay Islands need most.	11	20	1	1	1	0	3.44	1.00
Overall BICA does what it deserves.	1	41	0	1	1	0	3.73	70

III. Impact, Throughput and Context/General Questions

	F1	F4	F5	F6	F7	F8	Mean	Standard Deviation
BICA is not useful to the extent the Bay Islands need it to be.	10	17	1	11	1	1	3.11	1.03
Island residents are unhappy with BICA their concerns are handled well.	1	0	0	1.5	1	23	2.49	1.23
Island communities are unhappy with BICA their concerns are handled well.	1	17	0	4	1	34	3.10	1.11
The government and legal system make it easy for interested people to form independent groups.	4	24	1	0	7	1	3.24	1.31
In BICA's view, the government and legal system are helpful to the organization.	4	24	1	0	4	0	3.13	1.00
Bay Islanders participate in groups outside of their families.	1	11	4	17	4	1	3.03	1.20

Bay Islanders understand the environmental effects of the things that are done in the islands.

2 16 4 20 12 0 3.43 1.10

Bay Islanders need to understand the environmental effects of the things that are done in the islands.

40 18 0 0 2 0 4.67 0.1

The people who do BICA programs have had enough training to do the job well.

4 26 4 10 1 0 3.40 1.10

Having well trained people is needed so the BICA program will be successful.

28 12 1 0 1 1 4.53 0.0

BICA members have constant interests.

7 42 1 1 1 1 3.91 0.1

Having interests or constant is needed so the BICA will be successful.

11 21 2 7 0 1 3.41 0.0

BICA members have constant interests with the rest of the members of the Bay Islands.

0 28 4 12 4 1 3.17 1.07

What BICA is doing is well known by most Bay Islanders.

4 12 1 20 3 0 2.94 1.23

BICA spends enough time and effort involving the community in the organization.

2 12 1 15 11 3 3.24 1.15

Most Bay Islanders agree with BICA's programs and ideas.

1 17 4 18 10 4 3.37 1.11

The support of most Bay Islanders is needed for BICA to be successful.

20 27 1 3 0 0 4.18 0.0

BICA members are active in the organization.

0 12 1 16 0 1 3.69 1.24

It is easy for members to participate in BICA if they want to.

14 27 0 0 3 1 3.79 1.14

BICA's decisions are made by one or a few individuals.

0 28 2 4 1 7 3.81 0.07

Islanders feel free to make suggestions to BICA.

16 10 0 1 1 1 4.20 0.1

BICA communicates with the membership regularly.

2 15 3 14 10 3 3.39 1.17

BICA is politically powerful in the Bay Islands and in Honduras.

1 11 2 23 7 0 3.43 1.07

Financial power is needed for BICA to be successful.

16 27 1 20 2 0 3.67 1.16

BICA has a lot of money to work with.

0 2 0 0 20 12 3.60 0.1

Having enough money is needed so BICA to be successful.

19 27 1 3 1 2 4.23 0.1

The leaders of BICA are powerful people in the Bay Islands.

3 25 0 0 6 3 3.33 1.18

Powerful leadership is needed for BICA to be successful.

22 24 1 3 0 2 4.24 0.0

BICA would be just as successful under different leadership.

4 20 10 13 1 3 3.34 1.10

BICA member well with other local organizations, schools and local government agencies.

0 10 1 3 0 7 4.00 0.07

Working with other local governmental and non-governmental organisations is needed for BCCA to be successful

28	16	0	0	8	1	4.32	58
BCCA works with national and international organisations and the national government.							
8	28	0	1	0	10	4.02	27

Working with national and international organisations is needed for BCCA to be successful

33	31	0	0	0	0	4.43	88
BCCA focuses on groups or individuals when it comes to environmental issues.							
4	34	5	7	8	10	3.15	4.11

Your family usually have about the same interest of money and the same cultural/background as you do

0	33	1	20	0	1	2.75	1.20
What is good for the environment is good for everyone in the Bay Islands.							
23	33	8	9	0	8	4.00	1.04

What is good for business is good for everyone in the Bay Islands

2	18	4	34	4	0	2.79	1.11
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APPENDIX 4
SUMMARY OF MEASURED EFFECTS OF ALL MEASURED VARIABLES

Table A4.1: Measured Ratings of Organizational Performance – Outcomes, reported by location
 Likert scale: 1=strongly agree, 4=agree, 3=neither agree nor disagree, 1=disagree, 5=strongly disagree/never

Variable	Orad (N=14)	Waters (N=1)	AB (N=1)	Grassies (N=1)	Uda (N=1)	Araras (N=1)	Guaya (N=1)	OMa (N=1)	Rosita (N=1)
BCA provides and manages the basic resources of the Bay Islands									
Q1	1.1	5	4.1	1.1	1.1	1.1	1.1	1.1	1.1
mean	2.66	3.66	3.56	1.56	1.66	1.56	1.56	1.66	1.56
BCA provides sustainable economic development through the tourism and management of the Islands natural resources									
Q1	1.1	5	4.1	1.1	1.1	1.1	1.1	1.1	1.1
mean	2.67	3.56	3.66	1.66	1.66	1.56	1.66	1.56	1.56
BCA promotes environmental awareness throughout the Bay Islands through educational and community involvement									
Q1	1.1	5	4.1	1.1	1.1	1.1	1.1	1.1	1.1
mean	4.22	3.56	4.16	4.11	4.33	4.33	4.33	4.33	4.33
BCA supports and manages the Islands representative fisheries, agriculture and endangered species									
Q1	1.1	5	4.1	1.1	1.1	1.1	1.1	1.1	1.1
mean	1.54	1.66	1.33	1.33	1.33	1.54	1.66	1.56	1.33
Overall BCA has met their goals as well as we are able to meet them									
Q1	1.1	5	4.1	1.1	1.1	1.1	1.1	1.1	1.1
mean	2.55	1.54	1.56	1.34	1.66	1.54	1.33	1.56	1.66

Table 44.3 Member Rating of Organizational Performance – Overall Performance, overall and by function

Likert scale: 5=strongly agree, 4=agree, 3=neutral agree/disagree, 2=disagree, 1=strongly disagree										
Overall organizational performance										
	Overall	Market	HR	Customer (incl)	Sales (incl)	Product (incl)	Operations	Finance	Legal	Research
	N=58	N=41	N=47	N=32	N=34	N=26	N=23	N=23	N=38	N=23
BICA has been successful in the past year in terms of how business has developed										
mean	48	4	58	11	11	28	33	45	28	
range	3.73	3.75	3.71	3.44	3.85	4.24	3.73	3.69	3.86	
BICA has been able to manage resources from outside of the firm effectively										
mean	30	5	38	4	5	25	4	11	25	
range	3.43	3.25	3.31	3.25	3.49	3.25	3.15	3.28	3.19	
BICA has been able to recruit resources from local people and markets										
mean	48	5	57	5	17	31	5	15	28	
range	3.73	3.44	3.85	3.47	4.29	3.84	3.47	4.23	3.44	
BICA has been able to get everything for most of its members and employees										
mean	48	7	55	7	37	33	7	19	38	
range	3.43	3.11	3.84	3.66	3.23	3.52	3.18	3.23	3.84	
BICA has been able to provide most of the products requested										
mean	48	5	57	11	15	33	11	37	38	
range	3.23	3.44	3.44	3.49	3.34	3.88	3.49	3.11	3.49	
BICA is better than its peers										
mean	33	5	41	11	18	23	11	28	38	
range	3.47	4	3.67	3.27	3.34	3.51	3.27	3.3	3.9	
BICA is working for intelligent effort and resources by financial activities										
mean	44	7	57	5	18	24	5	18	31	
range	3.64	3.23	3.88	3.33	4.05	4.23	3.33	3.33	4	
BICA has suitable management programs										
mean	44	7	33	5	14	13	8	18	37	
range	3.35	3.11	3.28	3.68	3.67	3.45	3.3	3.3	3.3	
Overall BICA does what it aims to do										
mean	48	4	56	10	16	20	8	25	38	
range	3.63	3.3	3.64	3.8	3.45	3.39	3.4	3.58	3.86	

Table A4-4: Member Rating of Organizational Performance – Appropriateness of Outputs
(agrees/strongly agrees, neutral, and/or disagrees)

		Disagree	Neutral		Agree		Strongly agree	
		N=15	N=8	N=42	N=44	N=74	N=11	N=20
		Mean	Mean	Mean	Mean	Mean	Mean	Mean
		SD	SD	SD	SD	SD	SD	SD
BCCA should be an environmental education program								
	mean	54	9	47	11	18	24	47
	range	4-74	4-74	4-54	6-77	4-79	6-79	4-67
BCCA should raise money from wealthy of the city leaders								
	mean	54	9	47	11	18	24	47
	range	4-74	4-74	4-54	6-77	4-79	6-79	4-67
BCCA should raise money from local people and parents								
	mean	54	9	47	11	18	24	47
	range	4-74	4-74	4-54	6-77	4-79	6-79	4-67
BCCA should get money for its members and employees								
	mean	54	9	47	11	18	24	47
	range	4-74	4-74	4-54	6-77	4-79	6-79	4-67
BCCA should work with the already established ones								
	mean	54	9	47	11	18	24	47
	range	4-74	4-74	4-54	6-77	4-79	6-79	4-67
BCCA should collect the garbage								
	mean	54	9	47	11	18	24	47
	range	4-74	4-74	4-54	6-77	4-79	6-79	4-67
BCCA should work for volunteer about environmental health activities								
	mean	54	9	47	11	18	24	47
	range	4-74	4-74	4-54	6-77	4-79	6-79	4-67
BCCA should have website management program								
	mean	54	9	47	11	18	24	47
	range	4-74	4-74	4-54	6-77	4-79	6-79	4-67
Overall BCCA does what it should do								
	mean	49	8	52	10	21	15	18
	range	3-67	3-67	3-67	3-67	3-79	3-79	3-67

Table 84-1 Member Rating of Organizational Performance-Organizational Performance, by grade, language and nationality

Likert scale: 1=strongly agree, 4=agree, 3=neither agree nor disagree, 2=disagree, 1=strongly disagree, 5=strongly disagree											
	Male (n=22)	Female (n=32)	Spanish (n=14)	English (n=17)	Local (n=17)	Non-Local (n=17)	English (n=14)	Male (n=23)	Female (n=34)	Local (n=14)	Non-Local (n=14)
BICA's organizational education programs help them understand											
mean	26	27	24	24	23	25	25	28	27	24	24
range	1-31	2-33	1-28	2-32	2-28	4	1-33	1-33	2-33	2-32	1-34
BICA has been able to solve many of the Big 5 issues											
mean	24	24	21	20	22	25	22	21	21	27	22
range	1-31	2-32	2-24	1-29	1-29	1-31	1-30	1-29	1-30	1-33	1-31
BICA has been able to solve many of the local people's problems											
mean	25	27	24	24	22	26	25	28	27	24	22
range	1-30	1-33	2-28	1-31	1	1-32	1-34	1-34	2-34	1-32	1-32
BICA has been able to get things done for some of the members and employees											
mean	24	24	21	20	22	25	22	25	25	28	26
range	1-30	2-33	1-28	1-34	1-31	1-32	1-33	2-35	2-35	1-33	1-33
BICA has been able to catch over the illegal imported goods											
mean	23	25	24	24	25	27	25	26	28	22	22
range	1-31	1-32	1-30	1-33	1-32	1-32	1-33	1-34	1-33	1-35	1-34
BICA reduces the garbage											
mean	23	26	23	22	22	27	26	25	25	22	24
range	2-27	1-32	2-27	1-30	1-29	1-30	1-34	2-31	2-34	1-31	1-30
BICA makes for good sports along environmentally harmful subjects											
mean	21	22	18	24	25	27	25	26	26	28	24
range	1-30	1-32	1-25	1-32	1-31	1-32	1-33	1-34	1-32	1-33	1-32
BICA has wildlife management programs											
mean	23	26	23	23	22	26	25	26	26	24	24
range	1-31	1-32	1-30	1-30	1-34	1-34	1-33	1-34	1-34	1-34	1-30
Overall BICA does what it says to do											
mean	21	22	18	23	25	27	27	26	26	28	24
range	1-27	1-32	1-28	1-31	1-33	1-32	1-33	1-33	1-33	1-34	1-32

Table A4.6: Member Rating of Organizational Performance – Appropriateness of Outputs (organizational activities, by gender, language and nationality)

Likert scale: 1=strongly agree, 4=agree, 3=member agree but disagree, 2=disagree, 1=strongly disagree, 5=strongly disagree												
	Male (male) N=22	Female (female) N=32	Spanish (Spanish) N=12	English (English) N=20	Rural vs. (rural vs.) N=14	Non- (non-) N=17	English (English) N=11	Male (male) N=20	Female (female) N=24	Spanish (Spanish) N=10	English (English) N=14	Non- (non-) N=14
BCA should do governmental integration program												
mean	32	34	36	38	37	37	41	35	36	36	36	36
error	4.81	4.72	4.87	4.71	4.73	4.82	4.72	4.79	4.74	4.73	4.73	4.81
BCA should encourage participation of the key subjects												
mean	32	32	32	39	37	37	44	34	36	35	35	35
error	4.77	4.75	4.73	4.72	4.76	4.79	4.75	4.75	4.74	4.73	4.73	4.73
BCA should raise money from local people and farmers												
mean	32	30	35	32	30	37	46	35	32	32	32	36
error	4.77	4.5	4.73	4.45	4.77	4.62	4.68	4.78	4.5	4.73	4.73	4.74
BCA should get training for its members and employees												
mean	32	31	32	33	30	37	46	35	36	35	35	36
error	4.44	4.61	4.6	4.68	4.63	4.79	4.68	4.62	4.64	4.63	4.63	4.73
BCA should conduct the "Market" program year												
mean	32	32	36	36	32	37	46	35	36	35	35	36
error	4.72	4.72	4.73	4.72	4.73	4.72	4.73	4.68	4.74	4.73	4.73	4.73
BCA should collect the savings												
mean	32	32	32	35	37	37	47	35	36	35	35	36
error	3.55	3.64	3.46	3.52	3.58	3.58	3.74	3.74	3.73	3.73	3.73	3.77
BCA should watch for and report illegal organizational financial activities												
mean	32	32	32	36	32	37	47	35	36	35	35	35
error	4.47	4.44	4.45	4.72	4.43	4.43	4.4	4.46	4.47	4.44	4.44	4.43
BCA should have wildlife management program												
mean	32	32	32	35	37	37	47	34	36	35	35	35
error	4.56	4.72	4.55	4.71	4.72	4.74	4.7	4.45	4.75	4.72	4.72	4.72
Overall BCA does what it should do												
mean	31	30	35	34	33	38	45	37	38	35	35	37
error	3.74	3.64	3.73	3.75	3.67	3.66	3.63	3.63	3.71	3.75	3.75	3.69

<i>no</i>	31	9	40	11	17	22	33	14	30
<i>mean</i>	2.39	2.28	2.62	2.39	2.31	2.33	2.27	2.60	2.3
MCA is significantly associated to the five islands and a district									
<i>no</i>	48	8	56	13	14	27	33	14	22
<i>mean</i>	2.42	2.5	2.42	2.33	2.27	2.37	2.31	2.5	2.41
MCA has a lot of meetings in each with									
<i>no</i>	34	7	41	9	13	14	9	14	16
<i>mean</i>	2.38	2.78	2.42	2.11	2.46	2.44	2.11	2.5	2.32
The leaders of MCA are present in people in the five islands									
<i>no</i>	43	9	52	13	11	23	33	20	19
<i>mean</i>	2.52	2.69	2.43	2.51	2.81	2.27	2.31	2.9	2.4
MCA works well with other local organizations, schools and local government agencies									
<i>no</i>	47	7	54	12	17	25	31	19	14
<i>mean</i>	2	2.43	2.33	2.33	2.44	2.11	2.42	2.34	2.04
MCA works well with national and international organizations and the national government									
<i>no</i>	41	1	42	9	16	31	37	13	20
<i>mean</i>	2.32	2.61	2.34	2.34	2.25	2.14	2.48	2.32	2.11
MCA focuses on groups or individuals rather than on the community as a whole									
<i>no</i>	41	9	50	8	13	21	7	17	16
<i>mean</i>	2.33	2.33	2.41	2.47	2.46	2.33	2.04	2.33	2.11

BCA's experience with the monitoring regularly

no	20	21	22	23	24	25	26	27	28	29	30
mean	2.1	2.52	2.45	2.28	2.4	2.58	2.65	2.3	2.43	2.35	2.37

BCA is actively present in the day schools and in the home

no	31	32	33	34	35	36	37	38	39	40	41
mean	2.78	2.32	2.33	2.55	2.47	2.75	2.78	2.59	2.54	2.68	2.78

BCA has a lot of money in bank with

no	42	43	44	45	46	47	48	49	50	51	52
mean	1.47	1.75	1.81	1.22	1.54	1.63	1.58	1.3	1.8	1.3	1.39

The leaders of BCA are married people in the day schools

no	53	54	55	56	57	58	59	60	61	62	63
mean	2.31	2.32	2.8	2.46	2.38	2.69	2.6	2.72	2.6	2.59	2.58

BCA works with various local organisations, schools and local government agencies

no	64	65	66	67	68	69	70	71	72	73	74
mean	2.4	4.07	5	5	2.33	4.13	3.14	3.89	2.6	3.72	4.1

BCA works with national and international organisations and the national government

no	75	76	77	78	79	80	81	82	83	84	85
mean	2.54	4.09	4.14	2.56	4.11	2.58	4.18	2.7	2.65	3.89	4.12

BCA have no groups involved when it comes to microcredit loans

no	86	87	88	89	90	91	92	93	94	95	96
mean	3.89	3.31	3.28	2.38	2.18	2.75	2.68	3.38	2.47	3.02	2.75

Table A4.9: Member Rating of Organizational Performance – International Council, overall and by island

Likert scale: <i>Extremely agree, Agree, Don't agree nor disagree, I-disagree, I-strongly disagree, Don't know/empty</i>										
	Ext N=14	Agree N=9	Dis N=13	Don't know N=12	I-disag N=11	Disagree N=10	Don't know N=11	I-disag N=10	Disag N=14	Empty N=14
The government and legal system make it easy for environmental groups to form independent groups										
all	47	0	47	49	13	32	12	15	32	
avg ^a	1.24	0	1.23	1.40	1.49	1.40	0.8	1.03	1.39	
In FICAs groups, the government and legal system work well for the organization										
all	46	1	48	11	15	25	11	13	32	
avg ^a	1.20	0	1.31	1.04	1.28	1.15	1.04	1.1	1.19	
Key Islanders participate in groups outside of their islands										
all	33	7	41	13	17	24	11	10	31	
avg ^a	1.03	1.44	1.22	1.11	1.21	1.26	1.0	1.07	1.04	
Key Islanders understand the environmental effects of the things that are done on the islands										
all	34	7	40	12	18	14	12	10	31	
avg ^a	1.05	1.11	1.44	1.03	1.31	1.17	1.07	1.01	1.14	
Key Islanders used to understand the environmental effects of the things that are done in the islands										
all	36	8	34	12	16	24	11	14	34	
avg ^a	1.07	1	1.07	1.04	1.25	1.18	1.04	1.19	1.09	
FICA members have common interests islandwide										
all	40	9	42	10	10	13	12	20	31	
avg ^a	1.03	1.44	1.03	1.04	1.15	1.05	1.01	1.1	1.0	
FICA members have common interests with the rest of the members of the five islands										
all	40	9	42	11	10	14	13	20	31	
avg ^a	1.11	1.44	1.04	1.04	1.04	1.20	1.04	1.1	1.02	
Your friends usually have about the same amount of money and the same cultural background you do										
all	32	9	42	12	11	14	12	19	31	
avg ^a	1.12	1.00	1.34	1.11	1.02	1.14	1.03	1.29	1.05	
What is good for the environment is good for everyone on the islands										
all	34	0	34	12	14	14	12	11	34	
avg ^a	1.06	0	1.06	1.17	1.05	1.04	1.03	1	1.08	
What is good for business is good for everyone on the islands										
all	34	0	34	12	14	14	12	11	34	
avg ^a	1.1	0	1.1	1.16	1.16	1.16	1	1.1	1.1	

Table 4d (8) Member Rating of Organizational Performance – Socioeconomic Concerns, by gender, nationality and language

Likert scale: 1=strongly agree, 4=agree, 5=neutral agree nor disagree, 7=disagree, 9=strongly disagree, 10=neutral opinion											
	Italian (n=22)	French (n=12)	Spanish (n=12)	English (n=11)	Portuguese (n=12)	Swedish (n=17)	Swiss (n=10)	Other French (n=24)	English (n=48)	Other (n=19)	Women (n=114)
The government and legal system make it easy for women to form independent groups.											
mean	28	27	34	35	33	33	32	35	36	36	33
range	1-34	1-33	2-38	2-53	1-37	2-4	1-35	2-4	2-53	2-52	1-53
In PECSA cases, the government and legal system are helpful in the organization.											
mean	27	25	32	35	33	34	33	36	35	33	32
range	1-33	1-31	2-4	1-45	1-44	2-37	1-40	1-37	1-55	1-53	1-52
The independent organizations are groups made up of their families.											
mean	32	28	34	38	36	34	33	33	40	39	35
range	1-35	1-39	1-39	2-43	1-45	1-42	1-39	1-39	2-49	1-50	1-53
The independent organizations are organizational efforts of the large first generation in the family.											
mean	33	32	33	38	37	37	35	34	38	37	34
range	1-39	1-47	1-33	1-44	1-39	1-43	1-32	1-43	1-43	1-54	1-43
The independent organizations are organizational efforts of the large first generation in the family.											
mean	32	32	35	38	37	37	37	37	38	38	35
range	1-35	1-43	1-4	1-43	1-39	1-43	1-34	1-42	1-43	1-53	1-43
PECSA members have economic autonomy.											
mean	32	31	35	38	37	34	34	33	40	39	35
range	1-35	1-39	1-47	1-47	1-44	1-40	1-37	1-37	1-53	4	1-53
PECSA members have autonomy relations with the rest of the members of the big family.											
mean	31	32	32	38	36	37	34	34	42	38	34
range	1-35	1-34	1-4	1-48	1-37	1-39	1-33	1-44	1-44	1-44	1-34
These groups usually bring about the economic growth of women and the agricultural development of the											
mean	32	31	35	38	37	38	37	35	40	39	35
range	1-36	1-32	1-43	1-39	1-44	1-43	1-39	1-39	1-47	1-53	1-43
What is good for the community is good for everyone in the big family.											
mean	32	32	32	37	37	37	37	37	38	38	35
range	1-35	1-37	1-4	1-43	1-39	1-43	1-43	1-4	1-43	1-43	1-43
What is good for everyone is good for everyone in the big family.											
mean	31	32	32	38	37	37	37	37	38	38	35
range	1-35	1-39	1-39	1-44	1-44	1-43	1-34	1-43	1-43	1-43	1-43

Table 64.14 Mexican Rating of Organizational Performance – Perceptions of Performance, overall rating by location

Labor units: 1=strongly agree, 2=agree, 3=neither agree nor disagree, 4=disagree, 5=strongly disagree, 6=not stated									
	Cost	Market	AB	Geographic	Units	Human	Company	Units	Market
	(N=74)	(N=9)	(N=43)	(N=13)	(N=13)	(N=26)	(N=12)	(N=18)	(N=21)
Having well trained people is needed for programs to be successful									
<i>n</i>	73	9	43	13	13	25	12	19	20
<i>mean</i>	4.20	4.78	4.26	4.46	4.54	4.17	4.50	4.50	4.62
Strong customer information needed in the new B2C to be successful									
<i>n</i>	73	9	43	13	13	25	12	19	20
<i>mean</i>	5.74	5.89	5.60	5.92	5.92	5.64	5.75	5.68	5.95
The support of senior key executives is needed for B2C to be successful									
<i>n</i>	74	9	43	13	13	26	12	19	21
<i>mean</i>	4.12	4.78	4.20	4.15	4.08	4.17	4.25	4.32	4.29
Adapted process is needed for B2C to be successful									
<i>n</i>	73	9	43	13	13	26	12	19	21
<i>mean</i>	5.20	5.44	5.00	5.08	5.20	5.17	5	5.26	5.29
Having enough money is needed in order for B2C to be successful									
<i>n</i>	73	9	43	13	13	26	12	19	21
<i>mean</i>	4.20	4.22	4.23	5.00	4.54	4.58	5.0	4.2	4.28
Excellent technology is needed in order for B2C to be successful									
<i>n</i>	73	9	43	13	13	25	12	19	20
<i>mean</i>	4.20	5.89	4.35	4.46	4.54	4.50	4.50	4.32	4.62
Working with other local government and non-governmental organizations is needed for B2C to be successful									
<i>n</i>	74	9	43	13	13	26	12	19	21
<i>mean</i>	4.02	4.78	4.02	4.54	4.54	4.08	4.38	4.3	4.42
Working with national and international organizations is needed for B2C to be successful									
<i>n</i>	74	9	43	13	13	26	12	19	21
<i>mean</i>	4.40	5.44	4.23	4.67	4.58	4.60	4.67	4.32	4.65

Table A4.11 Member Rating of Organizational Performance – Perceptions of Performance, by gender, agegroup and nationality

Likert scale: 1=strongly agree, 4=agree, 7=neither agree nor disagree, 9=disagree, 10=strongly disagree, 11=not applicable											
	Male (n=11)	Female (n=10)	Spanish (n=11)	English/Irish (n=10)	Non- Mex (n=12)	Mex (n=10)	Non- Mex (n=10)	English (n=10)	Latin (n=10)	Women 50-59	
Background issued people is needed for programme to be successful											
<i>n</i>	20	20	14	19	14	22	18	24	48	24	34
<i>mean</i>	4.75	4.45	4.79	4.84	4.83	4.55	4.67	4.66	4.52	4.79	4.68
Having someone volunteer as support for NCA will be successful											
<i>n</i>	20	20	14	17	16	21	18	11	47	27	34
<i>mean</i>	4	3.84	4.07	4.06	4.03	3.85	4	3.73	3.85	3.94	3.85
The support of local law enforcement is needed for NCA to be successful											
<i>n</i>	20	20	12	19	17	11	22	14	48	27	34
<i>mean</i>	4.15	4.04	4.4	4.26	4.43	3.5	4.45	3.86	4.19	4.33	4.12
Political power is needed for NCA to be successful											
<i>n</i>	21	11	16	19	20	17	19	14	48	29	34
<i>mean</i>	3.86	3.27	3.82	3.87	3.84	3.76	3.84	3.87	3.82	3.79	3.76
Having enough money is needed in order for NCA to be successful											
<i>n</i>	22	20	15	17	16	17	17	24	48	27	31
<i>mean</i>	4.54	4.1	4.47	4.12	4.13	3.88	4.25	4	4.19	4.14	4.08
Powerful leadership is needed in order for NCA to be successful											
<i>n</i>	21	14	16	17	17	11	17	10	44	29	31
<i>mean</i>	4.14	4.1	4.13	4.18	4.14	3.8	4.15	3.88	4.13	4.24	3.92
Working with other local organisations and non-governmental organisations is needed for NCA to be successful											
<i>n</i>	22	21	16	14	17	10	19	24	48	29	34
<i>mean</i>	4.54	4.46	4.13	4.57	4.14	4.21	4.42	4.46	4.46	3.12	4.44
Working with national and international organisations is needed for NCA to be successful											
<i>n</i>	21	12	16	16	17	17	19	24	48	29	34
<i>mean</i>	4.43	4.42	4.13	4.38	4.15	3.84	4.43	4.31	4.29	4.11	4.28

APPENDIX 5 REGRESSION RESULTS

Table A5.1. Key and Classification of Variables Generated at Regression Analysis

Statement (Operational variable or issues attached to objectives or parameters)	Type of Variable	Symbolic Representation
BICA promotes and manages the long-term objectives of the Bay Islands (Overall organizational objectives)	Outcome	Y1
BICA promotes sustainable resources development through the use and management of the islands' natural resources	Outcome	Y2
BICA promotes environmental resources throughout the Bay Islands through individual and community involvement.	Outcome	Y3
BICA conserves and restores the islands' representative habitats and rare and endangered species.	Outcome	Y4
Overall BICA has met their goals as well as it is able to meet them. (Achievement of overall organizational goals/objectives given institutional constraints)	Overall Outcome	Y5
Overall BICA does what it tries to do. (Achievement of program objectives/performance)	Overall Outcome	X17, Y6
BICA environmental education programs have been successful. (Program/output performance)	Output	X1, Y7
BICA should do environmental education programs. (Appropriateness of program given constraints, role and needs)	Output	X2
BICA has been able to raise money from outside of the Bay Islands	Output	X3, Y8
BICA should raise money from outside of the islands.	Output	X4
BICA has been able to raise money from local people and tourists.	Output	X5, Y9
BICA should raise money from local people and tourists.	Output	X6
BICA has been able to get housing for some of its residents and employees	Output	X7, Y10
BICA should get housing for its residents and employees.	Output	X8
BICA has been able to watch over the islands' protected areas.	Output	X9, Y11
BICA should watch over the islands' protected areas.	Output	X10
BICA collects the garbage.	Output	X11, Y12

BICA should reflect the findings	Output	X01
BICA monitor the and reports illegal environmentally harmful activities	Output	X03, X14
BICA should monitor the and report illegal environmentally harmful activities	Output	X04
BICA has wildlife management program	Output	X05, X12
BICA should have wildlife management program	Output	X06
Overall BICA does what it should do. (Overall appropriateness of programs given organizational resources, role and needs)	Overall Output	X08, 97
Overall BICA does what the they should and want. (Overall role and program choice reflecting local needs vs external demands)	Overall Output	X09
Overall BICA does what it does best. (Program choice reflecting comparative advantage/abilities of organization)	Overall Output	X09
BICA it has used to do what the they should and it is to. (Organizational constraints/physical inputs)	Input/ Internal Structure	X20
When members are unhappy with BICA then members are handled well. (Internal conflict resolution)	External Behavior	X22
When organizations are unhappy with BICA then systems are handled well. (Internal conflict resolution)	External Behavior	X22
The government and legal system make it easy for national people to form autonomous groups. (Enabling or inhibiting legal and regulatory environment)	Institutional Context	X24
In BICA context, the government and legal system are helpful to the organization. (Degree of governmental cooperation with organization)	Institutional Context	X25
Key stakeholders participate in groups outside of their function. (Propensity to organize or interact)	Institutional Context	X26
Key stakeholders understand the environmental effects of the things that we have in the islands. (Overall education level relative organizational relevance)	Institutional Context	X27
Key stakeholders need to understand the environmental effects of the things that we have in the islands. (Significance of organization to local needs)	Institutional Context/ Necessity Condition	X28

The people who do BICA programs have had enough training to do the job well. (Skills and abilities/knowledge aspect)	Input/ External Environment	302
Strong, well trained people is needed to to survive program will be a success. (Commitment or human aspect)	Input/ Necessary Condition	303
BICA members have common interests. (Motivation for membership)	Internal Structural	304
Strong, members is common awarded to be more BICA will be successful	Necessary Condition	305
BICA members have common interests with the rest of the residents of the Bay Islands. (Special interest regarding interest)	Interpersonal Context	306
Most BICA, looking a well interest by most Bay Islanders. (Communication, needs, significance of role in local society)	Personal Behavioral	307
BICA speaks through local and other existing the community social organizations. (External communication/participation, local-based support)	External Inter-Local	308
Most Bay Islanders agree with BICA's programs and ideas. (Community/Consensus, local-based support)	Institutional Context	309
The support of most Bay Islanders awarded for BICA to be successful	Necessary Condition	310
BICA membership agrees to the organization. (Participation)	Internal Structural	311
It is easy for members to participate in BICA if they want to. (Communication, flexibility, parking time)	Internal Structural	312
BICA's decisions are made by one or a few individuals. (Decision-making structure)	Internal Structural	313
Members feel free to make suggestions to BICA. (Availability of information flow structure)	Internal Structural	314
BICA communication with the membership regularly. (External communication and decision-making)	External Behavioral	315
BICA is politically powerful in the Bay Islands and in Honduras. (Organizational influence)	External Interpersonal	316
Political power awarded for BICA to be successful	Necessary Condition	317

BRCA have lot of money to work with (Abundance and availability of financing/Financial Capital)	Input/ Internal Structural	200
Having money is necessary in order for BRCA to be successful. (Necessity of Financial Capital)	Input/ Necessary Condition	200
The leaders of BRCA are powerful people in the Bay Islands (Influential leadership)	Internal/ Structural	200
Powerful leadership is needed for BRCA to be successful	Necessary Condition	200
BRCA works well with other local organizations, officials and local government agencies. (External linkage)	External Behavioral	200
Working with other local governmental and non-governmental organizations is needed for BRCA to be successful	Necessary Condition	200
BRCA works well national and international organizations and the national government. (External linkage)	External Behavioral	200
Working with national and international organizations is needed for BRCA to be successful	Necessary Condition	200
BRCA follows an organization-wide plan to attain its environmental goals. (Performance/Innovation/Competence)	External Behavioral	200
These brands usually have about the same amount of money and the same cultural background as you do. (Equal and consistent resources)	Institutional/ Context	200
What is good for the government is good for everyone in the Bay Islands. (Physical/Natural resource from over-dependence)	Institutional/ Context	200
What is good for business is good for everyone in the Bay Islands (Economic over-dependence)	Institutional/ Context	200

Table 2.5. Correlation Among Outputs and Inputs (Direction 2)

Independent Variable Regression Value	Dependent Variables (2 Independent Equations)							
	Y0	Y1	Y10	Y11	Y12	Y13	Y14	Y15
Intercept	2.45	1.51	2.56	4.58	.41	-0.37	2.83	-.34
X01	.66	.64	.82	.92	-.34	-.13	.66	.32
X02	.78	.35	.33	1.17	-.62	.23	.29	.37
X03	-.30	.47	-.12	-.36	-.32	.18	-.38	-.24
X04	-.20	.41	.14	.32	-.38	-.14	-.12	.18
X05	.88	.88	-.34	-.43	.37	.34	.32	.37
F-test	87	50	58	1.08	1.88	1.22	1.39	0.94
	405.305	405.305	405.305	405.305	405.305	405.305	405.305	405.305
Confidence	not	not	not	99%	99%	not	99%	77%
	significant	significant	significant			significant		
Observations	33	33	33	34	34	33	33	34
Degrees of Freedom	32	32	32	33	33	32	32	33

* -90% confidence level input; † -90% confidence level output; ‡ -90% confidence level input and output.

Table A3.1. Comparing Between Gaussian and Laplace Algorithms.12

Independent Variable Parameter Value	Dependent Variables at Independent Parameters					
	T1	T2	T3	T4	T5	T6
Intercept	1.02	-0.05	0.05	-0.04	0.08	0.04
AGE	0.0	0.0	0.0	0.0	0.0	0.0
AGE ²	0.0	0.0	0.0	0.0	0.0	0.0
AGE ³	-0.0	0.0	0.0	-0.0	-0.0	-0.0
AGE ⁴	0.0	0.0	0.0	0.0	0.0	0.0
AGE ⁵	0.0	0.0	0.0	0.0	0.0	0.0
AGE ⁶	0.0	0.0	0.0	0.0	0.0	0.0
F-stat	1.72 (0.05, 54)	1.49 (0.05, 54)	1.11 (0.05, 54)	4.04 (0.05, 54)	2.58 (0.05, 54)	4.33 (0.05, 54)
Goodness	73%	80%	not significant	99%	95%	98%
Mean square	0.0	0.0	0.0	0.0	0.0	0.0
Significance	0.0	0.0	0.0	0.0	0.0	0.0

1. χ^2 (0.05, confidence level at 54 df) 2. χ^2 (0.05, confidence level at 54 df) 3. χ^2 (0.05, confidence level at 54 df)

Table A3.1. Correlations Among Outcomes and Degree (Appendix B)

Independent Variable Pearson's Value	Dependent Variable (R-squared estimate)					
	Y1	Y2	Y3	Y4	Y5	Y6
Intercept	-0.75	-1.14	-0.57	-0.77	-0.64	-0.24
X1	-0.44 ¹	-0.21	0.34	-0.20	0.39	-0.25
X2	-0.64	0.34	-0.43	-0.77	-0.35	0.23
X3	0.37	0.57 ¹	0.67 ¹	0.77 ¹	0.70	0.36
X4	0.23	-0.22	0.28	0.42	0.10	0.41
X5	0.25 ¹	0.44	0.34	0.30	-0.12	0.23
X6	-0.69	0.37	-0.77	-0.70	0.47	-0.47
X7	0.26 ¹	0.78	0.77	0.76 ¹	0.77 ¹	0.48 ¹
X8	0.11	0.40 ¹	0.13	-0.27	-0.30	-0.31
F-test	1.43	3.48	3.94	4.78	2.48	2.89
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Goodness	0.75	0.75	0.67	0.64	0.64	0.36
Observations	30	30	30	30	30	30
Degree of Freedom	31	31	31	31	31	31

¹—95% confidence level (sig.); ²—0.75 confidence level (sig. greater than 0.001).

Table A8.3. Regressions Among *Staphylococcus* and *Chrysomelids* (Regression 3)

Independent Variable Parameter Value	Dependent Variable (<i>S. pyrae</i> among others)						
	Y1	Y2	Y3	Y4	Y5	Y6	Y7
Intercept	0.43	-0.43	-0.01	-4.23	2.44	-0.30	24
X1	-0.15 ¹	-0.04	0.08	-0.22	0.05	-0.22	
X2	0.18	0.43	-0.16	-0.12	-0.24	0.33	-20
X3	0.13	-0.46 ¹	0.18	-0.17	0.13	0.05	
X4	0.41	-0.24	0.22	-0.20	0.23	-0.19	-63 ¹
X5	-0.02	0.50 ¹	-0.18 ¹	0.63	0.22	-0.22	
X6	1.00 ¹	0.18	-0.04	0.78 ¹	0.10	0.12	33
X7	0.00	-0.16	-0.07	0.20	0.02	-0.26	
X8	-0.11	0.10	-0.13	0.40	-0.15	-0.04	-44 ¹
X9	0.30	0.15	0.05	0.24	-0.12	0.17	
X10	0.44	0.03 ¹	0.12	-0.12	-0.20	0.11	23 ¹
X11	0.10	-0.13	0.05	-0.22	0.07	-0.13	
X12	0.00	-0.12	-0.15	-0.30	0.00	0.00	27 ¹
X13	0.44	0.47	0.16	0.60 ¹	0.22 ¹	0.67 ¹	
X14	-0.20	0.60 ¹	-0.25	0.40	-0.40	-0.28 ¹	81 ¹
X15	0.10	0.23 ¹	0.19	0.03	-0.00	0.34	
X16	-0.05	0.40	-0.13	0.34	0.05	-0.44	-187 ¹
F-test	2.97	1.69	1.40	1.63	1.64	1.90	4.93
	0.075, 1.12	0.075, 1.23	0.075, 1.22	0.075, 1.12	0.075, 1.12	0.075, 1.09	0.029, 0.03
Confidence	95%	95%	90% significant	94%	70%	70%	79.7%
Observations	21	21	21	24	24	23	30
Degrees of Freedom	12	9	11	18	12	15	40

¹ -10% confidence level (2-tail) ² -1% confidence level or greater (2-tail)

Table A.3.4. Correlations Among Outputs and Interest Variables (Equations 3)

Dependent Variables (3 Independent Estimated Relationships)								
Independent Variable Parameter Value	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
Intercept	2.25	7.17	7.14	2.45	2.48	2.58	1.44	1.31
Q11	0.73	-0.54	-0.82	0.85	0.12	-0.33	-0.41	-0.39
Q21	-0.14	-0.43	-0.46	-0.09	-0.16	-0.24	-0.32	-0.13
Q34	0.39 ¹	0.24	0.27	0.44 ¹	0.40 ¹	-0.10	0.34 ¹	0.41 ¹
Q35	-0.17 ¹	-0.18	-0.29 ¹	0.18	-0.30	-0.33	-0.36 ¹	-0.40
Q40	-0.16	-0.09	-0.01	-0.03	-0.14	-0.16	-0.32	-0.28
Q41	0.22	-0.34	-0.09	-0.13	0.76	-0.28	0.11	-0.09
Q44	-0.10	0.08	-0.05	-0.14 ¹	-0.15	-0.30	-0.43 ¹	-0.43
Q47	-0.17	0.14	-0.04	0.43	0.82	-0.14	0.11	-0.15
F-test	0.19	0.43	1.07	2.98	1.24	0.11	1.77	1.44
	0.7(3.17)	0.5(2.38)	0.3(0.37)	0.1(0.17)	0.3(3.37)	0.7(3.74)	0.1(0.17)	0.3(3.37)
Constant	not significant	not significant	70%	77.1%	not significant	not significant	19%	19%
Observations	34	34	34	34	34	34	34	34
Degrees of Freedom	27	29	27	27	24	28	27	28

¹ -10% confidence level is met. ² -5% confidence level is met. ³ -1% confidence level is met.

Table A6.2. Correlations Among Outcomes and Interventions: Family Disputes II
(Dependent Variables II: Independent Subdimensions)

Independent Variable Parameter Value	Y0	Y1	Y2	Y3	Y4	Y5
Intercept	7.12 [†]	7.14	6.93	7.79	4.95	7.47
X01	0.39	-0.01	0.04	0.18	0.09	0.22 [†]
X02	-0.19	-0.11 [†]	0.09 [†]	-0.01	-0.04	0.13
X03	0.28 [†]	-0.07 [†]	0.19 [†]	-0.07 [†]	0.20 [†]	0.25 [†]
X04	-0.19	0.08	0.04	0.07	-0.11	0.07
X05	-0.14	-0.20	0.04	-0.20 [†]	-0.09	-0.11
X06	0.04	0.09	-0.11	0.09	-0.09	-0.04
X07	0.01	0.05	-0.08	-0.04	-0.09 [†]	-0.11
X08	0.11	-0.07	0.11 [†]	-0.14	0.11	-0.19
R-sqr	0.09	0.10	0.14	0.07	0.03	0.07
	(0.1, 1.0)	(0.1, 2.0)	(0.1, 2.0)	(0.1, 2.0)	(0.1, 0.7)	(0.1, 2.0)
Consistency	not applicable	91.2%	95%	91.0%	90%	95%
Observations	30	11	10	22	26	14
Degrees of Freedom	28	20	19	14	11	20

[†]95% confidence level (p < .05). ^{††}90% confidence level (p < .10).

Table A5.4. Correlations Among Outputs and Potential Behavioral Variables (Ergonomics 2)

Independent Variable Parameter Value	Dependent Variables (Independent Parameters)							
	Y6	Y5	Y10	Y11	Y12	Y13	Y14	Y15
Intercept	-2.71	-6.84	2.68	8.76	-3.33	-1.14	8.73	-6.34
X11	-4.90	-6.24	8.76	-0.13 ¹	1.88 ²	1.82 ²	1.18	-6.11
X12	1.39	-6.38	-0.55	1.13 ²	-0.94 ²	-0.13 ²	-1.18 ²	8.17
X13	-5.16	-6.11	4.16	-1.11 ²	1.41 ²	1.04 ²	0.07	8.82 ²
X14	-0.88	-6.02	-0.82	0.11 ²	-4.11 ²	-0.14	-6.16	8.88
X15	-0.17	-6.14	8.76	-4.12 ²	2.12 ²	-1.88	0.09 ²	-6.11
X16	-2.16	-6.88	8.82	0.14 ²	0.41 ²	-0.41	-6.88	8.88
X17	-2.11	-6.14	-8.11	0.11 ²	1.15 ²	8.88	0.11	8.11 ²
X18	-11.77	0.14	-0.88	0.11 ²	-6.11 ²	1.11 ²	-6.11	1.11
X19	-0.12	-6.09	-8.88	8.82 ²	0.11 ²	-2.18 ²	-6.11	-6.11
X20	1.88	1.17	-0.11	0.09 ²	0.11 ²	2.18 ²	0.04 ²	0.11
F-test	1.88	1.88	8.76	150.14	166.61	1.88	1.88	1.88
	0.0116, 0.01	0.0116, 0.01	0.0116, 0.01	0.0116, 0.01	0.0116, 0.01	0.0116, 0.01	0.0116, 0.01	0.0116, 0.01
Confidence	90%	90%	90%	99.99%	99.99%	100%	99%	99%
	significant	significant	significant					
Observations	13	12	14	14	13	14	18	18
Degree of Freedom	1	2	3	1	2	3	3	1

¹ < 0.05 confidence level (one-tail). ² < 0.1 confidence level (one-tail) (0.05).

Table A2.9. Correlations among Economic and Financial Behavioral Variables (Dependent R)

Independent Variable Parameter Values	Dependent Variable (Independent Behavioral)					
	Y1	Y2	Y3	Y4	Y5	Y6
Intercept	2.36	-4.22	1.22	1.48	1.23	8.1
X11	-0.72	0.89	-0.11	-0.24	0.82	-0.62
X12	0.44	-4.46	0.11	1.46	-3.88	0.18
X21	0.56	0.49	-0.22	-0.31	1.42	-0.12
X24	0.12	-4.16	-0.28	0.86	-1.28	0.12
X34	-0.04	0.65	1.22	-0.28	1.44	0.38
X41	-0.49	0.49	-1.46	-0.72	-0.22	-0.22
X42	0.22	0.48	1.1	0.11	0.02	0.25
X43	0.25	0.76	-0.18	-0.88	-0.28	0.44
X23	-1.34	-0.29	0.12	0.44	-0.44	-1.31 ¹
X25	0.44	0.64	-0.28	0.11	0.42	-1.28 ¹
F-stat	1.29	1.1	0.11	0.84	0.31	2.19
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Coefficient	not significant	significant	not significant	not significant	not significant	not significant
Observations	14	15	14	14	14	14
Degrees of freedom	3	2	3	3	3	3

1 = 10% confidence level (Student's); 2 = 5% confidence level (Student's).

Table A5.19: *Correlations Among Country and Institutional Variables (Equations 2)*

Dependent Variable is Independent Institutional Relationship								
Independent Variable	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8
Intercept	1.42	1.12	0.24	0.12	-0.82	1.75	7.2	0.02
Y1	-0.08	0.04	0.08	-0.02	0.27	0.08	-0.04	-0.04
Y2	-0.12	0.05	-0.02	0.02	-0.14	-0.05	-0.04	-0.07
Y3	0.16	-0.04	-0.02	0.02	-0.08	-0.05	0.02	0.04
Y4	-0.02	-0.01	-0.04	0.04	-0.02	-0.08	-0.02	-0.02
Y5	0.23	-0.14	0.03	0.02	-0.11	0.05	-0.01	0.08
Y6	0.07	0.02	0.04	0.05	0.14	0.44	0.14	0.07
Y7	-0.14	-0.08	-0.02	0.05	0.02	-0.12	-0.02	-0.14
Y8	0.01	-0.04	0.02	-0.12	-0.03	0.04	0.04	0.22
Y9	0.24	-0.02	0.05	-0.02	-0.05	-0.04	0.12	0.14
Y10	0.25	0.05	-0.02	0.02	0.12	0.03	0.08	-0.02
F test	1.47 187 18,299	0.72 187 18,299	0.07 187 18,299	1.02 187 18,299	0.3 187 18,299	0.9 187 18,299	0.28 187 18,299	0.45 187 18,299
Confidence	75%	not significant	not significant	75%	not significant	not significant	not significant	94%
Observations	35	34	33	32	31	30	29	31
Degrees of Freedom	34	33	32	31	30	29	28	30

* -95% confidence level (p < .05) ** -90% confidence level or greater (p < .01)

Table A5 | *Conditional Average Estimates and Individual Variables (Equation 10)*

Dependent Variable is Independent Schoolship ^a						
Independent Variable Parameter Value	T1	T2	T3	T4	T5	T6
Intercept	0.02	1.42	2.43	0.74	1.1	2.51
SEA	0.07	-0.00	-0.08 ^b	0.01	-0.08	0.08
SES	0.07	-0.14	0.00	-0.08	0.00	-0.03
SEA	-0.08 ^b	-0.11	-0.04	0.11	-0.08	-0.08
SES	-0.04	0.10	-0.01 ^a	-0.07 ^a	-0.08	-0.10
SEA	0.03	0.02 ^a	-0.11	0.11	0.04	-0.10
SES	-0.03 ^a	0.14	-0.14 ^a	-0.07	0.04	-0.07 ^a
SEA	-0.08	0.10	-0.07 ^a	0.11	0.11	0.10
SEA	-0.00	-0.09	0.00	0.13	-0.01 ^a	0.07 ^a
SES	0.04	-0.02	-0.07 ^a	-0.10	0.00	0.10
SEA	-0.08 ^a	-0.10	-0.04	0.11	0.17	-0.00
Intercept	1.03	1.47	0.14	1.10	1.17	1.04
	df(10,19)	df(10,17)	df(10,16)	df(10,20)	df(10,20)	df(10,17)
Condition	99%	70%	90%	99% Significant	99% Significant	99% Significant
Spear's rho	20	14	14	10	14	10
Agreement	34	23	20	22	16	14
Function						

^a =95% confidence level of (a=0.05) ^b =99% confidence level of (a=0.01)

APPENDIX I
FORMAL SPECIFICATION OF ESTIMATION RELATIONS

Equation 1. A relationship exists between ECU, Δ , output and its output

Dependent Variables	Independent Variables							
Q1 =	β_{01}	$\beta_{11}^1 \Delta$	$\beta_{21}^1 \Delta$	$\beta_{31}^1 \Delta$	$\beta_{41}^1 \Delta$	$\beta_{51}^1 \Delta$	$\beta_{61}^1 \Delta$	ϵ_1^1
Q2 =	β_{02}	$\beta_{12}^1 \Delta$	$\beta_{22}^1 \Delta$	$\beta_{32}^1 \Delta$	$\beta_{42}^1 \Delta$	$\beta_{52}^1 \Delta$	$\beta_{62}^1 \Delta$	ϵ_2^1
Q3 =	β_{03}	$\beta_{13}^1 \Delta$	$\beta_{23}^1 \Delta$	$\beta_{33}^1 \Delta$	$\beta_{43}^1 \Delta$	$\beta_{53}^1 \Delta$	$\beta_{63}^1 \Delta$	ϵ_3^1
Q4 =	β_{04}	$\beta_{14}^1 \Delta$	$\beta_{24}^1 \Delta$	$\beta_{34}^1 \Delta$	$\beta_{44}^1 \Delta$	$\beta_{54}^1 \Delta$	$\beta_{64}^1 \Delta$	ϵ_4^1
Q5 =	β_{05}	$\beta_{15}^1 \Delta$	$\beta_{25}^1 \Delta$	$\beta_{35}^1 \Delta$	$\beta_{45}^1 \Delta$	$\beta_{55}^1 \Delta$	$\beta_{65}^1 \Delta$	ϵ_5^1
Q6 =	β_{06}	$\beta_{16}^1 \Delta$	$\beta_{26}^1 \Delta$	$\beta_{36}^1 \Delta$	$\beta_{46}^1 \Delta$	$\beta_{56}^1 \Delta$	$\beta_{66}^1 \Delta$	ϵ_6^1
Q7 =	β_{07}	$\beta_{17}^1 \Delta$	$\beta_{27}^1 \Delta$	$\beta_{37}^1 \Delta$	$\beta_{47}^1 \Delta$	$\beta_{57}^1 \Delta$	$\beta_{67}^1 \Delta$	ϵ_7^1
Q8 =	β_{08}	$\beta_{18}^1 \Delta$	$\beta_{28}^1 \Delta$	$\beta_{38}^1 \Delta$	$\beta_{48}^1 \Delta$	$\beta_{58}^1 \Delta$	$\beta_{68}^1 \Delta$	ϵ_8^1
Note: Q1 = output number, $\beta_{01}^1 \Delta$ = constant parameter, $\beta_{11}^1 \Delta$ = output number, $\beta_{21}^1 \Delta$ = output number, $\beta_{31}^1 \Delta$ = output number, $\beta_{41}^1 \Delta$ = output number, $\beta_{51}^1 \Delta$ = output number, $\beta_{61}^1 \Delta$ = output number, ϵ_1^1 = error, ϵ_2^1 = error, ϵ_3^1 = error, ϵ_4^1 = error, ϵ_5^1 = error, ϵ_6^1 = error, ϵ_7^1 = error, ϵ_8^1 = error.								

Figure 1 A relationship exists between HCA's structural factors and its outputs

Dependent Variable	Independent Variables					
Q1 =	$\beta_0^1 + \frac{\beta_1^1 S_1}{\beta_2^1 S_2} =$	$\beta_3^1 S_3 + \frac{\beta_4^1 S_4}{\beta_5^1 S_5} +$	$\beta_7^1 S_7 + \frac{\beta_8^1 S_8}{\beta_9^1 S_9} +$	$\beta_{10}^1 S_{10} +$	$\beta_{11}^1 S_{11} +$	$\beta_{12}^1 S_{12} +$
Q3 =	$\beta_0^3 + \frac{\beta_1^3 S_1}{\beta_2^3 S_2} +$	$\beta_3^3 S_3 +$	$\beta_4^3 S_4 =$	$\beta_7^3 S_7 + \frac{\beta_8^3 S_8}{\beta_9^3 S_9} +$	$\beta_{10}^3 S_{10} +$	$\beta_{11}^3 S_{11} +$
Q3 =	$\beta_0^3 + \frac{\beta_1^3 S_1}{\beta_2^3 S_2} +$	$\beta_3^3 S_3 +$	$\beta_4^3 S_4 =$	$\beta_7^3 S_7 + \frac{\beta_8^3 S_8}{\beta_9^3 S_9} +$	$\beta_{10}^3 S_{10} +$	$\beta_{11}^3 S_{11} +$
Q4 =	$\beta_0^4 + \frac{\beta_1^4 S_1}{\beta_2^4 S_2} +$	$\beta_3^4 S_3 +$	$\beta_4^4 S_4 =$	$\beta_7^4 S_7 + \frac{\beta_8^4 S_8}{\beta_9^4 S_9} +$	$\beta_{10}^4 S_{10} +$	$\beta_{11}^4 S_{11} +$
Q5 =	$\beta_0^5 + \frac{\beta_1^5 S_1}{\beta_2^5 S_2} +$	$\beta_3^5 S_3 +$	$\beta_4^5 S_4 =$	$\beta_7^5 S_7 + \frac{\beta_8^5 S_8}{\beta_9^5 S_9} +$	$\beta_{10}^5 S_{10} +$	$\beta_{11}^5 S_{11} +$
Q6 =	$\beta_0^6 + \frac{\beta_1^6 S_1}{\beta_2^6 S_2} +$	$\beta_3^6 S_3 +$	$\beta_4^6 S_4 =$	$\beta_7^6 S_7 + \frac{\beta_8^6 S_8}{\beta_9^6 S_9} +$	$\beta_{10}^6 S_{10} +$	$\beta_{11}^6 S_{11} +$
Q7 =	$\beta_0^7 + \frac{\beta_1^7 S_1}{\beta_2^7 S_2} +$	$\beta_3^7 S_3 +$	$\beta_4^7 S_4 =$	$\beta_7^7 S_7 + \frac{\beta_8^7 S_8}{\beta_9^7 S_9} +$	$\beta_{10}^7 S_{10} +$	$\beta_{11}^7 S_{11} +$
Q8 =	$\beta_0^8 + \frac{\beta_1^8 S_1}{\beta_2^8 S_2} +$	$\beta_3^8 S_3 +$	$\beta_4^8 S_4 +$	$\beta_7^8 S_7 + \frac{\beta_8^8 S_8}{\beta_9^8 S_9} +$	$\beta_{10}^8 S_{10} +$	$\beta_{11}^8 S_{11} +$

Q1-Q8 = output number, β_0^i β_1^i β_2^i β_3^i β_4^i β_7^i β_8^i β_9^i β_{10}^i β_{11}^i = statistical parameters, S_1 S_2 S_3 S_4 S_7 S_8 S_9 S_{10} S_{11} S_{12} = structural factors number, ϵ^i = output number, i = hypothesis number, H = structural factors of HCA, σ^2 = unexplained variation

Hypotheses 5. A relationship exists between HCCA structural features and the evaluation of an assigned engineer.

Dependent Variable	Independent Variables					
QC.1 =	$\beta_0 +$	$\beta_1 \beta_1 +$	$\beta_2 \beta_2 +$	$\beta_3 \beta_3 +$	$\beta_4 \beta_4 +$	$\beta_5 \beta_5 +$
		$\beta_6 \beta_6 +$	$\beta_7 \beta_7 +$	$\beta_8 \beta_8 +$	$\beta_9 \beta_9 +$	ϵ^2
QC.2 =	$\beta_0 +$	$\beta_1 \beta_1 +$	$\beta_2 \beta_2 +$	$\beta_3 \beta_3 +$	$\beta_4 \beta_4 +$	$\beta_5 \beta_5 +$
		$\beta_6 \beta_6 +$	$\beta_7 \beta_7 +$	$\beta_8 \beta_8 +$	$\beta_9 \beta_9 +$	ϵ^2
QC.3 =	$\beta_0 +$	$\beta_1 \beta_1 +$	$\beta_2 \beta_2 +$	$\beta_3 \beta_3 +$	$\beta_4 \beta_4 +$	$\beta_5 \beta_5 +$
		$\beta_6 \beta_6 +$	$\beta_7 \beta_7 +$	$\beta_8 \beta_8 +$	$\beta_9 \beta_9 +$	ϵ^2
QC.4 =	$\beta_0 +$	$\beta_1 \beta_1 +$	$\beta_2 \beta_2 +$	$\beta_3 \beta_3 +$	$\beta_4 \beta_4 +$	$\beta_5 \beta_5 +$
		$\beta_6 \beta_6 +$	$\beta_7 \beta_7 +$	$\beta_8 \beta_8 +$	$\beta_9 \beta_9 +$	ϵ^2
QC.5 =	$\beta_0 +$	$\beta_1 \beta_1 +$	$\beta_2 \beta_2 +$	$\beta_3 \beta_3 +$	$\beta_4 \beta_4 +$	$\beta_5 \beta_5 +$
		$\beta_6 \beta_6 +$	$\beta_7 \beta_7 +$	$\beta_8 \beta_8 +$	$\beta_9 \beta_9 +$	ϵ^2

Key: QC.4 = constant variable; QC.1 = overall performance; β_0 = β_1 = estimate parameter; β_1 = structural feature number; β_2 = estimate number; β_3 = hypothesis number; β_4 = structural feature of HCCA; ϵ = unexplained variation.

Appendix 10: A relationship exists between features of the Bay Islands and the indicators of BICA's perceived reputation

Dependent Variable	Independent Variables						
DC.1 = $\beta_{01}^{(1)}$	$\beta_{11}^{(1)} A_1 +$	$\beta_{21}^{(1)} A_2 +$	$\beta_{31}^{(1)} A_3 +$	$\beta_{41}^{(1)} A_4 +$	$\beta_{51}^{(1)} A_5 +$	$\beta_{61}^{(1)} A_6 +$	$\epsilon_1^{(1)}$
DC.2 = $\beta_{02}^{(2)}$	$\beta_{12}^{(2)} A_1 +$	$\beta_{22}^{(2)} A_2 +$	$\beta_{32}^{(2)} A_3 +$	$\beta_{42}^{(2)} A_4 +$	$\beta_{52}^{(2)} A_5 +$	$\beta_{62}^{(2)} A_6 +$	$\epsilon_2^{(2)}$
DC.3 = $\beta_{03}^{(3)}$	$\beta_{13}^{(3)} A_1 +$	$\beta_{23}^{(3)} A_2 +$	$\beta_{33}^{(3)} A_3 +$	$\beta_{43}^{(3)} A_4 +$	$\beta_{53}^{(3)} A_5 +$	$\beta_{63}^{(3)} A_6 +$	$\epsilon_3^{(3)}$
DC.4 = $\beta_{04}^{(4)}$	$\beta_{14}^{(4)} A_1 +$	$\beta_{24}^{(4)} A_2 +$	$\beta_{34}^{(4)} A_3 +$	$\beta_{44}^{(4)} A_4 +$	$\beta_{54}^{(4)} A_5 +$	$\beta_{64}^{(4)} A_6 +$	$\epsilon_4^{(4)}$
DC.5 = $\beta_{05}^{(5)}$	$\beta_{15}^{(5)} A_1 +$	$\beta_{25}^{(5)} A_2 +$	$\beta_{35}^{(5)} A_3 +$	$\beta_{45}^{(5)} A_4 +$	$\beta_{55}^{(5)} A_5 +$	$\beta_{65}^{(5)} A_6 +$	$\epsilon_5^{(5)}$

Eq. DC.1 = intercept number, $\beta_{0j}^{(j)}$ = intercept parameter, A_1 = estimated binary number, A_2 = relative number, * = hypothesis number, A_4 = estimated categorical aspect of the Bay Islands, $\epsilon_j^{(j)}$ = unexplained variation.

GEOGRAPHICAL SKETCH

Andrew F. Hall was born in Buffalo, New York, on December 14, 1941. His selected "patriotic line," his quotation of his sixty years' part in the upper Midwest of the United States, presently in Madison, Wisconsin. He attended the University of California-Berkeley, and the London School of Economics and Political Science prior to graduating from the University of Wisconsin-Madison with a B.A. in economics and international relations in 1964. Shortly by route considered, among doctoral programs and a position and options for doing, he determined to seek his fortune in the continent of the north and America. After three winters in South America, one in Europe and three in Japan and Viet, Colombia, he found the spirit of the expanding reputation of the GDE more well-suited. Finding a point of "real world" experience, even home and working study skills graduate school looked almost as the "logical" choice. In August, 1990, he moved to Gainesville, Florida (presumably the best place in the place) without an understanding of the real but with his pocket of four years Colombia, Latin America. He means the ability to check systems, from best, from where there just might be alignment, not half-madness or confusion, toward a real message and understand those documents should be among his most accomplishments. He and Laura now share their lives with a remarkably adolescent Labrador Retriever named Quinn. The two manage the record of a life-time playmate in the real future.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy


Clyde P. Kiser, Chair
Professor of Food and Resource Economics

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Clara D. Millard
Professor of Food and Resource Economics

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David M. Millard
Professor of Food and Resource Economics

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James E. Spillman
Associate Professor of Wildlife Ecology
and Conservation

This dissertation was submitted to the Graduate Faculty of the College of Agriculture and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy

August 1994


David L. Boy
Dean, College of Agriculture

Dean, Graduate School